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Kurtosis and Skewness on Lagged Market Risk Premium during Covid-19 Pandemic

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Abstract

This study investigates the impact of return distribution such as skewness and kurtosis on lagged market risk premium to risk premium in Indonesia capital market during COVID-19 pandemic. Data are monthly, from January to December 2020, and 674 firms. Panel data predictive regression is used. The method for this study, I first looked for market risk premium and risk premium descriptives. Second, I used monthly panel data predictive regression from lagged market risk premium and risk premium in 2020. Third, I incorporate skewness and kurtosis simultaneously. Fourth, I exclude kurtosis or skewness in previous model. The results are market risk premium and risk premium having negative return. Risk premium has lower returns than market risk premium. The beta lagged market risk premium is significant to risk premium. The skewness and kurtosis market risk premium do not signify to risk premium together but significant separately. I can conclude that the movement market risk premium and risk premium during COVID-19 pandemic are average negative. Beta lagged market risk premium can explain the future monthly risk premium. Contrary skewness and kurtosis, those can not be run together. When the model used to beta lagged market risk premium and skewness, partially the skewness was significant and the direction was positive. However, only beta lagged market risk premium and kurtosis were staying negative to the previous model. Incorporating lagged assumptive distribution only explain the risk premium under 1 % about 0.24%.

Keyword : Skewness, Kurtosis, Risk Premium, and Lagged Market Risk Premium

INTRODUCTION

The World Health Organization (WHO) explains that Coronaviruses (Cov) is a virus that infects the respiratory system. This viral infection is called COVID-19. Coronavirus causes common cold to more severe illnesses such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV). Corona virus is zoonotic which means it is transmitted between animals and humans. According to the Indonesian Ministry of Health,

the development of the COVID-19 case in Wuhan began on December 30, 2019, when the Wuhan Municipal Health Committee issued a statement "urgent notice on the treatment of pneumonia of unknown cause".

In Indonesia, the spread of this virus began on March 2, 2020, allegedly starting from an Indonesian citizen who had direct contact with a foreign national who came from Japan. This has been announced by Mr. President Jokowi. Over time, the spread of covid-19 has increased significantly.

The government continues to update the development of data on positive cases of Corona (COVID-19), patients recovering, and those who have died in the country. Sunday (16/5/2021), there were additional 3,080 positive cases of COVID-19, 3,790 recovered patients, and 126 positive Corona patients who died. The number of cases recovered today is higher than the number of positive cases. There was a decrease in active cases by 836 cases to 90,800 active cases. The development of the Corona data was conveyed by the COVID-19 Handling Task Force on Sunday (16/5/2021). Corona pandemic handling data is updated every day at 12.00 WIB (Pratama, 2016).

The Indonesian economy has been difficult due to COVID-19 despite many subsidiaries have been obtained from the government (Hanoatubun, 2020). In US and Brazilian, COVID 19 does not change in level market efficiency in the short, medium, and long term. However, Russia and India have been different story based on martingale difference spectral test. In long term, the Indian stock markets have been more inefficient while Russian have been more information efficient (Okorie & Lin, 2021a).

During Covid-19 Pandemic, in US, consumer discretionary sector have the highest level efficiency but utilities sector have the lowest efficiency and also in financial industry (Choi, 2021). From US listed firms, the firms with top brands have higher stock returns, lower systematic risk and lower idiosyncratic risk than others (Huang et al., 2021). It might be also similar to Blue Chips in Indonesia (Lubis et al., 2020).

Government responses to index such as social distancing and lockdown also make relation to 45 market indeks returns to be negative. Spillover become dominantly determining the negative return (Alexakis et al., 2021). For non-fundamental news became matters when COVID-19 such as death and cases and increased the overall risk. Thus, there is fractal contagion effect in short term in return and volatilities (Okorie & Lin, 2021b). Also, Barro Misery Index have been negative to 76 countries in stock market returns (Sergi et al.,

2021). Oil also has contribute not only to equity premium as predictability (Wang et al., 2019) (Wang et al., 2019) but also during the COVID-19 pandemic (Zhang & Hamori, 2021). There are spillover between oil market and stock market in US, Japan, and Germany both return in short term and volatility in long term.

Effect non-pharmaceutical interventions such as restriction close disclosure and travel prohibitions have no significant to stock market return in Norway but significant in Sweden (Størdal et al., 2021). During COVID-19 crisis the emerging countries are affected by financial market of advanced market, specially, European markets as primary driver of contagion transmission of stress and uncertainty. (Belaid et al., 2021)

Many investors have been herding in international stock markets during COVID-19 crisis. Thus, Oxford Government Response Stringency Indeks and short selling restriction mitigates the behaviour herding (Kizys et al., 2021).

Compared to the SARS, Swine Flu, MERS, Ebola Virus, and Zika Virus outbreaks, COVID-19 had the largest negative impact on S & P 500 market returns (O'Donnell et al., 2021) and also G7 countries (Izzeldin et al., 2021). Also the sinking of S&P market are affected by implied volatility and implied correlation, due to China stock market and liquidity in S&P 500 (Just & Echaust, 2020). Japanese market indexes have different direction since the COVID-19 pandemic. It's market prices have been increasing until now so have done it's exchanges JPY/USD (Narayan et al., 2020).

Stock markets have reacted to COVID-19 more proactively to the growth in number of confirmed cases as compared to deaths (Ashraf, 2020a). The reactions have been stronger when the level of uncertainty aversion of investor is higher that national culture is an important factor which determines the cross country differences in investors' respond to news (Ashraf, 2020b). The global stock markets could also make

contagion to each individual stock markets during pandemic (Abuzayed et al., 2021).

Gold and stock markets relationships are positive during COVID-19 (Drake, 2021). However, the impact COVID-19 on stock market performance in Africa with Bayesian structural time series approach showing the negative effects (Takyi & Bentum-Ennin, 2020).

Conditional skewness of stock return distribution of the distribution from a GARCH with Skewness (GARCH-S) as market crash risk and Baidu indeks constructed a fear indeks show that conditional skewness reacts negatively and its indicating pandemic increases stock market crash risk when the fear sentiment is high (Liu et al., 2021). Instability and crashes spreading from China to other countries (especially European countries) (Contessi & De Pace, 2021).

There are evidences in 67 equity markets that stock markets in countries with low unemployment rates and populated with firms that are conservative investment policies and low valuations relative to expected profits tend to be immune to COVID-19 crisis (Zaremba et al., 2021). VIX and Infectious Disease EMV have superior predictive ability for the France, UK, and Germany (Li et al., 2020). Cryptocurrency made it to rebound but stock markets trapped in the bear phase (Caferra & Vidal-Tomás, 2021).

Skewness is the third moment of data distribution which describes the gathered data that does not approach the average distribution. Whereas Kurtosis is the fourth moment of the distribution that describes the extreme value in a data distribution. Based on previous research, not all shares on the Stock Exchange can be directly influenced by the market. When the market goes up and the market goes down. However, there may also be market skewness and market kurtosis which may directly affect the expected return on shares on the Indonesia Stock Exchanges. Previous research had examined about Indonesia Capital Market. Indonesia Capital Market or IHSG is the lowest risk market among Southeast Asian Countries (Lubis, 2018a). Thus, From many

indexes, there are several indexes that are market stability such as development board index, the miscellaneous industry index, the Indonesian FTSE indeks, the LQ-45 index, the 30 stock index, and the sharia index (Lubis, 2018b).

From the previous explanation on researches, I could see that during COVID-19 pandemic, almost stock market returns in all of the world found in bear phase except Japanese Market. This fact motivate me to explore the stock market returns which called asset pricing.

In literature review of asset pricing that yields on shares were influenced by the market. All stock movements are affected by market risk called the Capital Asset Pricing Model (CAPM) (Sharpe, 1964); (Lintner, 1965); (Black, 1972).

From the previous theoretical learning there is a link between asset pricing and skewness where the systematic risk of skewness also carries a premium risk (Rubinstein, 1973) (Kraus & Litzenberger, 1976) (Harvey & Siddique, 2000) and a model that states total skewness of both systematic and idiosyncratic is important in securities valuation (Brunnermeier et al., 2007); (Barberis et al., 2008); (Mitton & Vorkink, 2007). At Langlois (2019) there are differences with research beforehand regarding their assumptions with investors' choices. He did systematic and idiosyncratic skewness testing which resulted in that systematic skewness affects expected returns (Langlois, 2020). Elyasiani (2020) states that kurtosis is not a systematic price but rather a corporate risk (Elyasiani et al., 2020).

The phenomenon of this research is that market movements cannot influence all stocks thus require other variables that explain the movement of returns stock. Previous research was very strong by adding size, value, profitability, investment (Fama & French, 2015); (Fama & French, 1993) and momentum (Carhart, 1997) can more explain the risk premium from stocks than the beta market.

On another theory, there are research groups that focus on high order moment distribution such as Rubinstein (1973); Kraus and Litzenberger

(1976); Harvey and Siddique (2000); Dittmar (2002); Baksi, et al. (2003); Ang, et al. (2006), Guidolin and Timmerman (2008); Chabi-Yo (2012); Maheu, et al. (2013); Chabi-Yo, et al. (2014), and Conrad, et al. (2013). They focus on jointly testing market beta, skewness, and kurtosis.

Recent research measures the depth of the market crash (Cerrato et al., 2017); adding to adding to portfolio performance (Jondeau & Rockinger, 2012); (Martellini & Ziemann, 2010); the best predictor of market returns (Jondeau et al., 2019); specifying downside beta market (Harris et al., 2019); strengthening skewness and kurtosis with the GJR-GARCH method (1,1) (Alexander et al., 2021); and until the future third-moment absolute company returns have a negative relationship with institutional ownership and market capitalization, different from that in the US (Zhen, 2020).

From the explanation above, I would like to have an empirical perspective on kurtosis in the Indonesian capital market, whether it is a systematic risk, not a corporate risk. Also, this study examines the skewness lagged market risk premium that has been tested in several previous studies. The novelty of the method in this study is the empirical testing in the Indonesian capital market using panel data using skewness and kurtosis market as variables predictabilities on market risk premium.

First of all, this study investigates the description of movement risk premium and market risk premium during COVID-19 pandemic. Second, this study investigates the beta lagged market risk premium, the skewness lagged market risk premium, and the kurtosis lagged market risk premium. The third, this study analyze whether skewness or kurtosis exclude from model. The implication of this study examines whether skewness and kurtosis can run together in one model or skewness and kurtosis cannot be in a model to explain risk premium. Also, during COVID-19, many studies showing the bear phase of stock market return

almost in all of countries except Japanese. This study investigates deeper about risk premium from return distribution market risk premium.

METHOD

This research was quantitative approaching descriptive and associative. This research used panel data from Januari to December 2020 and idx.or.id (Indonesian Stock Exchanges). The firms used were 674. The data used were stock returns, market returns, risk free rates that proxied by Jakarta Interbank Offered Rate (JIBOR). Operational variables are risk premium (Dependent Variable) and lagged market risk premium, skewness lagged market risk premium, and kurtosis lagged market risk premium (Independent Variables).

The risk premium is as below:

$$r_{i,t} - r_{f,t}$$

The Market Risk Premium /IDX is

$$(r_{m,t-1} - r_{f,t-1})$$

The Skewness Market Risk Premium/ SKW is

$$(r_{m,t-1} - r_{f,t-1})^2$$

The Kurtosis Market Risk Premium Cube /KURT is

$$(r_{m,t-1} - r_{f,t-1})^3$$

The return formula for stock and market is

$$r = \ln P_t / P_{t-1}$$

R is return both stocks and market; Ln is logarithma natural; P_t is stock price in time t; P_{t-1} is

The equation model 1 incorporating kurtosis, skewness, and beta lagged market risk premium

$$r_{i,t} - r_{f,t} = \alpha_{i,t} + \text{IDX}_{m,t-1} (r_{m,t-1} - r_{f,t-1}) + \text{SKW}_{m^2,t-1} (r_{m,t-1} - r_{f,t-1})^2 + \text{KURT}_{m^3,t-1} (r_{m,t-1} - r_{f,t-1})^3 + \varepsilon_{i,t-1}$$

Model 2 incorporating skewness and beta lagged market risk premium

$$r_{i,t} - r_{f,t} = \alpha_{i,t} + \text{IDX}_{m,t-1} (r_{m,t-1} - r_{f,t-1}) + \text{SKW}_{m^2,t-1} (r_{m,t-1} - r_{f,t-1})^2 + \varepsilon_{i,t-1}$$

Model 3 incorporating kurtosis and beta lagged market risk premium

$$r_{i,t} - r_{f,t} = \alpha_{i,t} + \text{IDX}_{m,t-1} (r_{m,t-1} - r_{f,t-1}) + \text{KURT}_{m^3,t-1} (r_{m,t-1} - r_{f,t-1})^3 + \varepsilon_{i,t-1}$$

RESULTS

In table 1 showing statistic descriptives is presented in the following section:

Table 1. Statistic Descriptives

Statistic Descriptives	Market Risk Premium	Risk premium
Mean	-0.045541	-0.050027
Median	-0.020416	-0.047918
Maximum	0.052777	5.656775
Minimum	-0.233877	-5.242563
Std. Dev.	0.077254	0.565090
Skewness	-1.116536	0.271891
Kurtosis	3.493275	33.52010
Jarque-Bera	1762.487	314007.2
Probability	0.000000	0.000000
Sum	-368.3394	-404.6167
Sum Sq. Dev.	48.26438	2582.398
Observations	8088	8088

Table 1 shows that market risk premium have been less negative than risk premium. Market risk premium in Indonesia has no skewness as third moment from assumption distribution and kurtosis as fourth moment. Risk premium has kurtosis but no skewness.

In table 2 showing panel data pool regression with dv risk premium 11 periods 674 cross section, and total observation 7413 is presented in the following section:

Table 2 shows that pool panel data has significant error 0.76% minus constanta about 0.023673. Market risk premium has signified to risk premium about 0.594827 with error 0.0089. lag skewness and lag kurtosis are no significant at all. Beta lagged market risk premium, skewness lagged market risk premium and kurtosis risk premium simultaneously have influenced to risk premium with error 0.03%.

Table 2. Panel Data Pool Regression with DV Risk Premium 11 Periods 674 cross section, and Total Observation 7413

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.023673	0.008862	-2.671318	0.0076
IDX(-1)	0.594827	0.227262	2.617359	0.0089
SKW(-1)	-2.135345	3.425437	-0.623379	0.5331
KURT(-1)	-18.35968	12.24611	-1.499226	0.1339
R Squared	0.002525	Mean dependent var		-0.039978
Adjusted R Squared	0.002121	S.D. dependent var		0.585975
S.E. of regression	0.585354	Akaike info criterion		1.767338
Sum squared resid	2538.611	Schwarz criterion		1.771067
Log likelihood	-6546.639	Hannan-Quinn criter.		1.1768619
F-statistic	6.252301	Durbin-Watson stat		2.191329
Prob(F-statistic)	0.000310			

In table 2 showing panel data fixed effect cross-section regression with dv stock returns 11 periods 674 cross section, and total observation 7413 is presented in the following section:

premium partially still signify under probability 5%. It means pool regression is still promising model.

Table 3. Panel Data Fixed Effect Cross-section Regression with DV Stock Returns 11 Periods 674 cross section, and Total Observation 7413

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.023661	0.009050	-2.614521	0.0090
IDX(-1)	0.595929	0.232076	2.567822	0.0103
SKW(-1)	-2.129924	3.497969	-0.608903	0.5426
KURT(-1)	-18.35339	12.50540	-1.467637	0.1422
Effects Specification				
Cross-section fixed (dummy variables)				
R-Squared	0.054321	Mean dependent var		-0.039978
Adjusted R-squared	-0.040584	S.D. dependent var		0.585975
S.E. of regression	0.597748	Akaike info criterion		1.895587
Sum squared resid	2406.789	Schwarz criterion		2.526741
Log likelihood	-6348.994	Hannan-Quinn criter.		2.112447
F-statistic	0.572374	Durbin-Watson stat		2.311353
Prob(F-statistic)	1.000000			

Table 3 shows that Fixed effect cross-section does not signify to risk premium. It shows Prob(F. statistic) above 5%. However, beta lag market

In table 4 showing chow test for IDX(-1), SKW(-1), and KURT(-1) is presented in the following section:

Table 4. Chow Test for IDX(-1), SKW(-1), and KURT(-1)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.548199	(673,6736)	1.0000
Cross-section Chi-square	395.288714	673	1.0000

Table 4 showing fixed effect cross-section is less effective than pool regression. It shows from probability above 5%.

In table 5 showing panel data random effect cross-section regression with dv risk premiums 11 periods 674 cross section, and total observation 7413 is presented in the following section:

Table 5. Panel Data Random Effect Cross-section Regression with DV Risk Premiums 11 Periods 674 cross section, and Total Observation 7413

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.023673	0.009050	-2.615929	0.0089
IDX(-1)	0.594827	0.232074	2.563088	0.0104
SKW(-1)	-2.135345	3.497967	-0.610453	0.5416
KURT(-1)	-18.35968	12.50540	-1.468140	0.1421
Effects Specification				
		S.D.		Rho
Cross-section random		0.000000		0.0000
Idiosyncratic random		0.597748		1.0000
Weighted Statistics				
R-squared	0.002525	Mean dependent var		-0.039978
Adjusted R-squared	0.002121	S.D. dependent var		0.585975
S.E. of regression	0.585354	Sum squared resid		2538.611
F-statistic	6.252301	Durbin-Watson stat		2.191329
Prob(F-statistic)	0.000310			
Unweighted Statistics				
R-squared	0.002525	Mean dependent var		-0.39978
Sum squared resid	2538.611	Durbin-Watson stat		2.191329

Random effect cross-section model in F-statistic has signified under prob.5% in. Beta lag market risk premium has signified as like previous model. Lag skewness and kurtosis are not significant at all. Only, could explain this model 0,25%.

In table 6 showing hausman test for IDX(-1), SKW(-1), and KURT(-1) is presented in the following section:

Table 6 showing the random effect cross-

section is better than fixed effect because the prob. above 5%. It means the H_0 accepted

In table 7 showing panel data pool regression with dv risk premiums 11 periods 674 cross section, and total observation 7413 without kurtosis is presented.

Table 7 illustrating beta lag market risk premium and skewness lag have noticed under probability 5 %. Thus, this model can explain 0.2% the rest can be explained by others. This model also simulatanoeously really impact to risk premium with probability 0.026%.

In table 8 panel data fixed effect cross-section regression with dv risk premiums 11 periods 674 cross section, and total observation 7413 without kurtosis is presented.

Table 6. Hausman Test for IDX(-1), SKW(-1), and KURT(-1)

Test Summary	Chi-Sq. Statistic	d.f.	Prob.
Cross-section random	1.934446	3	0.5861

Table 7. Panel Data Pool Regression with DV Risk Premiums 11 Periods 674 cross section, and Total Observation 7413 without Kurtosis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.030028	0.007783	-3.857909	0.0001
IDX(-1)	0.750671	0.202113	3.714116	0.0002
SKW(-1)	2.763403	1.028169	2.687693	0.0072
R-squared	0.002223	Mean dependent var		-0.39978
Adjusted R-squared	0.001953	S.D. dependent var		0.585975
S.E. of regression	0.585403	Akaike info criterion		1.767372
Sum squared resid	2539.381	Schwarz criterion		1.770168
Log likelihood	-6547.763	Hannan-Quinn criter.		1.768333
F-statistic	8.253222	Durbin-Watson stat		2.190445
Prob(F-statistic)	0.000263			

Table 8. Panel Data Fixed Effect Cross-section Regression with DV Risk Premiums 11 Periods 674 cross section, and Total Observation 7413 without Kurtosis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.030013	0.007948	-3.776032	0.0002
IDX(-1)	0.751720	0.206394	3.642158	0.0003
SKW(-1)	2.767147	1.049944	2.635517	0.0084
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.054019	Mean dependent var		-0.39978
Adjusted R-squared	-0.040762	S.D. dependent var		0.595975
S.E. of regression	0.597799	Akaike info criterion		1.895637
Sum squared resid	2407.558	Schwarz criterion		5.525858
Log likelihood	-6350.179	Hannan-Quinn criter.		2.112177
F-statistic	0.569933	Durbin-Watson stat		2.310382
Prob(F-statistic)	1.000000			

Table 8 showing beta lag market risk premium and lag skewness have obviously impacted partially but not simultaneously.

In table 9 chow test for IDX(-1) and SKW(-1) is presented in the following section:

Table 10 showing the random effect has similar result as like pool regression. It is significant either partially or simultaneously.

In table 11 the hausman test for IDX(-1), and SKW(-1) is presented.

Table 9. Chow Test for IDX(-1) and SKW(-1)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.548107	(673,6737)	1.0000
Cross-section Chi-square	395.167203	673	1.0000

Table 9 explaining fixed effect is not good model because the probability above 5%.

In table 10 panel data random effect cross-section regression with dv risk premiums 11 periods 674 cross section, and total observation 7413 without kurtosis is presented.

Table 11 showing probability has above 5 %. It means the random effect cross-section is better than fixed effect.

In table 12 panel data pool regression with dv risk premiums 11 periods 674 cross section, and total observation 7413 without skewness is presented.

Table 10. Panel Data Random Effect Cross-section Regression with DV Risk Premiums 11 Periods 674 cross section, and Total Observation 7413 Without Kurtosis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.030028	0.007948	-3.777911	0.0002
IDX(-1)	0.750671	0.206393	3.637099	0.0003
SKW(-1)	2.763403	1.049941	2.631960	0.0085
Effects Specification				
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			0.597799	1.0000
Weighted Statistics				
R-squared	0.002223	Mean dependent var	-0.039978	
Adjusted R-squared	0.001953	S.D. dependent var	0.585975	
S.E. of regression	0.585403	Sum squared resid	2539.381	
F-statistic	8.253222	Durbin-Watson stat	2.190445	
Prob(F-statistic)	0.000263			
Unweighted Statistics				
R-squared	0.002223	Mean dependent var	-0.039978	
Sum squared resid	2539.381	Durbin-Watson stat	2.190445	

Table 11. The Hausman Test for IDX(-1), and SKW(-1)

Test Summary	Chi-Sq. Statistic	Chi-Sq d.f.	Prob.
Cross-section random	1.935592	2	0.3799

Table 12. Panel Data Pool Regression with DV Risk Premiums 11 Periods 674 cross section, and Total Observation 7413 Without Skewness

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.026296	0.007799	-3.371577	0.0008
IDX(-1)	0.690999	0.166868	4.140989	0.0000
KURT(-1)	-11.07766	3.675293	-3.014090	0.0026
R-squared	0.002473	Mean dependent var	-0.039978	
Adjusted R-squared	0.002204	S.D. dependent var	0.585975	
S.E. of regression	0.585329	Akaike info criterion	1.767121	
Sum squared resid	2538.744	Schwarz criterion	1.769918	
Log likelihood	-6546.833	Hannan-Quinn criter.	1.768082	
F-statistic	9.184908	Durbin-Watson stat	2.190778	
Prob(F-statistic)	0.000104			

Table 12 shows that beta lag market risk premium and kurtosis lagged market risk premium have significant with probability under 5%. The model can explain risk premium.

In table 13 panel data fixed effect cross-section regression with dv risk premiums 11 periods 674 cross section, and total

observation 7413 without skewness is presented.

Table 13 showing that fixed effect does not working for simultaneously with probability (F-statistic) 1. However the constant, beta lagged market risk premium and kurtosis lagged market risk premium are significant.

Table 13. Panel Data Fixed Effect Cross-section Regression with DV Risk Premiums 11 Periods 674 cross section, and Total Observation 7413 Without Skewness

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.026277	0.007964	-3.299246	0.0010
IDX(-1)	0.691858	0.170402	4.060160	0.0000
KURT(-1)	-11.08987	3.753103	-2.954853	0.0031
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.054269	Mean dependent var		-0.039978
Adjusted R-squared	-0.040487	S.D. dependent var		0.585975
S.E. of regression	0.597720	Akaike info criterion		1.895373
Sum squared resid	2406.921	Schwarz criterion		2.525594
Log likelihood	-6349.198	Hannan-Quinn criter.		2.111912
F-statistic	0.572726	Durbin-Watson stat		2.310766
Prob(F-statistic)	1.000000			

In table 14 chow test for IDX(-1) and KURT(-1) is presented.

Table 14 shows chow test. It tell whether the pool regression or fixed effect are accepted. The probability shows above 5% so the pool

regression is better than fixed effect.

In table 15 panel data random effect cross-section regression with dv risk premiums 11 periods 674 cross section, and total observation 7413 without skewness is presented.

Table 14. Chow Test for IDX(-1) and KURT(-1)

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.548253	(673,6737)	1.0000
Cross-section Chi-square	395.269499	673	1.0000

Table 15. Panel Data Random Effect Cross-section Regression with DV Risk Premiums 11 Periods 674 cross section, and Total Observation 7413 Without Skewness

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.026296	0.007964	-3.301686	0.0010
IDX(-1)	0.690999	0.170400	4.055149	0.0001
KURT(-1)	-11.07766	3.753093	-2.951609	0.0032
Effects Specification				
		S.D.		Rho
Cross-section random		0.000000		0.0000
Idiosyncratic random		0.597720		1.0000
Weighted Statistics				
R-squared	0.002473	Mean dependent var		-0.039978
Adjusted R-squared	0.002204	S.D. dependent var		0.585975
S.E. of regression	0.585329	Sum squared resid		2538.744
F-statistic	9.184908	Durbin-Watson stat		2.190778
Prob(F-statistic)	0.000104			
Unweighted Statistics				
R-squared	0.002473	Mean dependent var		-0.039978
Sum squared resid	2538.744	Durbin-Watson stat		2.190778

Table 15 shows panel data random effect cross-section. On that the results are partially and simultaneously similar to pool regression that are significant under 5%. The r-square is about 0,25%

In table 16 the hausman test for IDX(-1) and KURT(-1). is presented in the following section:

Table 16. The Hausman Test for IDX(-1) and KURT(-1).

Test Summary	Chi-Sq. Statistic	d.f.	Prob.
Cross-section random	1.936517	2	0.3797

Table 16 showing random effect model is better than fixed effect. The probability is about 0.3797 above 5%.

DISCUSSIONS

Table 1 shows risk premium has more negative than market risk premium in mean and median. There are no skewness in both but kurtosis only at risk premium. From those, it seems market risk premium cannot much explain risk premium.

On the three models created from the data panel starting from pool, fixed effects and random effect pool regression, the data pool has a significant simultaneous error of 0.000310. In the pool regression model, the constant has a parameter of -0.023673 with an error of 0.76% or with this model the current market return movement must exceed 0.023673 or if the market does not move in the next month, the average loss Risk Premium is 0.023673.

The IDX variable (-1) has a parameter of 0.594827 with an error of 0.89% or 99.11% confidence. A 10% increase in lagged market risk premium will increase the average Risk Premium in the following month by 0.059487 minus a constant 0.023673 which is 0.035814.

The variable SKW (-1) has a parameter of -2.13135345 but it is not significant with an error of 0.5331 with confidence 0.4669. Skewness has a negative or inverse relationship, the greater the skewness, the lower the risk premium in the

future. For example, if the lagged market risk premium increases by 10%, then the change in risk premiums in the future will be $-0.023673 + 0.059487 - 0.2135345$, namely -0.1777205 or down 17.77205%. The variable KURT(-1) has a parameter of -18.35968 with an error of 13.39% and a confidence of 86.61%. kurtosis has a negative relationship which means that

an increase in risk premium will reduce future returns. For example, when the lagged market risk premium increases by 10%, the risk premium changes by $-0.1777205 - 1.835968$ which is -2.0136885 .

From the above discussion, if you use the model above, the increase in the lagged market risk premium will reduce the risk premium in the future. This result does not seem to be in accordance with previous thoughts that the greater the risk, the greater the return. If you use this model, the increase in lagged market risk premium will not attract investors to invest in stocks and turn to bonds more. According to the R square model, this model can only explain 0.2525%, the remaining 99.7475% can be explained by other variables.

According to the Hausman test, the error of this model is above 5% which is 58.61%. This value illustrates that the random test model is better than the fixed effect. In this study I did not use a random effect because I only tested a model that included kurtosis.

Models that do not include kurtosis experience a difference in results, namely the constant becomes deeper, namely -0.030028 . If the lagged market risk premium does not change, the risk premium for the next one month will mean that the average future risk premiums will be loss of 0.030028.

IDX (-1) has a positive relationship with risk premiums of 0.750671. When the lagged

market risk premium increases by 10%, the risk premium changing to $-0.030028 + 0.0750671$ is 0.0450391.

The variable SKW (-1) has a parameter of 2.763403 with an error below 5%, namely 0.72% and has a positive relationship. For example, when the lagged market risk premium increases by 10%, the change in risk premium in the following month is $0.0450391 + 0.2763403$ is 0.3213794. When kurtosis is not added to this model, the skewness direction becomes positive so that an increase in lagged market risk premium will have an impact on the increase in risk premium in the following month, which initially was only 4.5% to 32%. This model becomes significant partially or simultaneously.

Judging from the change in direction in the skewness variable when entering kurtosis, the beta clustering will be better in two, namely the upside and the downside. You can also enter volatility instead of beta market because many have tested volatility.

The last model is a model that includes kurtosis without skewness. This model also shows how the direction of kurtosis which was originally negative when together with skewness remains negative without skewness. This creates a premise that when skewness and kurtosis are together, skewness and kurtosis cancel each other's influence on the risk premium.

In this model, the negative constant is significant at 0.026296. This illustrates that without any movement in the lagged market risk premium, the risk premium will definitely move in a negative position of 0.026296 in the future.

IDX (-1) has a positive relationship. This indicates that the market risk premium relationship is unidirectional, the higher the market risk premium, the higher the risk premium in the coming months. For example, an increase in the 10% lagged market risk premium will make the risk premium increase

by $-0.026296 + 0.069099$, namely 0.0428309.

KURT (-1) has a positive relationship too. When the lagged market risk premium increases by 10%, the risk premium will increase by $0.0428309 - 1.108987$ is -1.0661561

CONCLUSION

All in all, it the movement of the market risk premium on average is negative and the risk premium has a smaller return than the market risk premium. Market risk premium does not have kurtosis and skewness, but risk premium in Indonesia has kurtosis but not skewness. Second, beta lagged market risk premium significantly affects risk premium. Skewness and kurtosis are not significant to the risk premium when put together in the negative direction. However, when beta lagged market risk premium is tested only with skewness or kurtosis, the result is significant positive skewness but kurtosis remains significantly negative. Further research, pandemic make risk premium negatively, thus, risk free rate is better return than stock returns. Allocation asset must place to bonds to diversify investors baskets.

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