Uncertainty Volatility, Investment, And Cash Holding In ASEAN Countries

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Abstract: This study aims to show the effect of uncertainty on firms' corporate investment and cash holding in five ASEAN countries, namely Malaysia, Indonesia, Singapore, Thailand, and Vietnam. The study was conducted using data from non-financial public listed firms in these five ASEAN countries during the 2006 to 2020 period. The uncertainty volatility is measured using the standard deviation of the economic policy uncertainty index. The results of this study find that uncertainty volatility increases corporate investment and decreases corporate cash holding. This result indicates that high uncertainty economic condition cause firms to invest to reduce information asymmetry by giving signals to external investors through investment, and as result, it reduces the corporate cash holdings. Moreover, we also find that uncertainty volatility is more economically significant than Economic Policy Uncertainty itself. It is possible that uncertainty volatility can better capture the real uncertain condition in the economy.

Keywords: Investment; Cash Holding; Uncertainty.

Abstrak: Penelitian ini bertujuan untuk melihat pengaruh variabilitas ketidakpastian terhadap investasi dan *cash holding* perusahaan di lima negara yang termasuk dalam ASEAN yaitu Malaysia, Indonesia, Singapura, Thailand, dan Vietnam. Penelitian ini dilakukan menggunakan data perusahaan non-finansial yang sudah terdaftar pada bursa kelima negara tersebut pada tahun 2006-2020. Pengukuran variabilitas ketidakpastian diukur menggunakan standar deviasi dari indeks *economic policy uncertainty*. Hasil penelitian menemukan bahwa variabilitas ketidakpastian meningkatkan investasi perusahaan dan menurunkan kas perusahaan. Hasil ini menunjukkan bahwa ketidakpastian yang tinggi akan kondisi ekonomi menyebabkan perusahaan untuk melakukan investasi untuk mengurangi masalah informasi asimetrisi dengan memberikan sinyal kepada investor eksternal melalui investasi; dan akhirnya menyebabkan penurunan kas perusahaan. Selain itu, penelitian ini juga menemukan bahwa variabilitas ketidakpastian lebih berpengaruh secara ekonomi dibandingkan indeks *economic policy uncertainty* itu sendiri. Mungkin ukuran variabilitas ketidakpastian ini lebih baik dalam menangkap kondisi ekonomi yang sesungguhnya.

Kata Kunci: Investasi; Kas Perusahaan; Ketidakpastian.

INTRODUCTION

Uncertainty is one of the popular topics discussed in financial studies. Economic policy uncertainty (EPU) is a measurement developed to measure uncertainty (Baker et al., 2016). (Baker et al., 2016) found that EPU has an impact on fluctuations in various macroeconomic variables. These results also bring the topic of uncertainty to be one of the most widely discussed topics academically. As explained by the previous study, uncertainty needs to be a concern for policymakers (Baker et al., 2016). Naturally, the economic policies made are also based on the possibilities that will occur in the future by making forecasts based on available data and information. Regardless, there is still uncertainty about what will happen, so the level of uncertainty can also vary depending on changing contingencies and probabilities (Sharma et al., 2020).

Another reason that makes uncertainty also a concern for governments and economic players is its impact. Uncertainty can exacerbate economic recessions and hinder economic recovery (Baker et al., 2016). One example is during the Great Recession of 2008. Uncertainty affected the unemployment rate and depressed GDP (Born et al., 2018; Shoag and Veuger, 2016). This incident led to increased global volatility, both in the stock market and affecting economic activity. As a result, companies tend to be more careful in taking action and choose to take a "wait and see" position. This decision also resulted in reduced investment and hiring, which ultimately worsened the recession. Another example can be seen in the Covid-19 pandemic, which brings various kinds of uncertainty (Benigno et al., 2020). First, there is uncertainty about disease progression, variants, and vaccines. Second, there is uncertainty regarding the state of the economy due to social restrictions, quarantines, and lockdowns. Third, is uncertainty about how the government takes policies to deal with it, the economic impact of the policy, and how effective the policy will be (Benigno et al., 2020).

Several studies are conducted to examine the effect of uncertainty on macroeconomic factors. Previous studies have found that uncertainty negatively affects several aspects of the macroeconomy, such as GDP, unemployment rates, and country productivity (Al-Thaqeb and Algharabali, 2019; Baker et al., 2016; Nilavongse et al., 2020). Furthermore, (Choi and Loungani, 2015) found that uncertainty can affect unemployment. The study explains that aggregate uncertainty has a short, direct effect on the unemployment rate, and sectoral uncertainty has a longer-lasting effect on the unemployment rate. In addition to affecting a macroeconomic scale, uncertainty can also affect companies from various aspects. First, increased uncertainty can negatively affect investment (Gulen and Ion, 2016). This phenomenon happens because, in a high period of uncertainty, companies tend to delay investment (Wang et al., 2014). In addition, uncertainty can also affect the level of leverage owned by the company (Istiak and Serletis, 2020). Uncertainty can also cause a problem with funding from financial institutions, shorten debt maturity, and increase the cost of capital (Matousek et al., 2020; Phan et al., 2018; Xu, 2020).

When viewed from the broad impact caused by uncertainty, it is important to examine it more deeply about uncertainty. In the previous studies, previous researchers defined uncertainty as to the inability to project the probability of an event occurring perfectly. It can be said that future events have an unknown probability (Baker et al., 2016). Uncertainty with this definition has been widely studied in financial studies. However, there is uncertainty about the level of uncertainty in the future (uncertainty volatility) when talking

about uncertainty. According to (Baker et al., 2016) changes in the level of uncertainty can affect company decisions. This change in the level of uncertainty can occur for several reasons, or it could be from the nature of the measurement of uncertainty that is not yet entirely accurate (Goodell et al., 2021). Based on this possibility, the question arises of how the current level of uncertainty considers changes in the level of uncertainty in the future, and whether the potential variability of the EPU also affects the company's decisions. In this study, the uncertainty volatility is defined as a condition where there is uncertainty whether the level of uncertainty in the future that is currently observed will change. Research related to the uncertainty volatility itself is still rarely found. One of the studies that discuss the uncertainty volatility finds that the volatility of uncertainty affects the company's cash holding more than the EPU itself (Goodell et al., 2021). Based on the result of previous research, this study aims to see whether the uncertainty of the level of uncertainty affects the investment and cash holding of the company.

Why should this study discuss cash holding and corporate investment? Because previous studies showed that the need for cash is driven by precautionary measures when the business environment becomes riskier and requires liquidity (Demir and Ersan, 2017). Then another previous study found a negative relationship between uncertainty and investment (Gulen and Ion, 2016). This result happens because companies tend to delay investment decisions to obtain additional information amid high uncertainty. Thus, this study wants to see whether the variability of EPU (uncertainty volatility) can have the same effect as EPU on cash holding and corporate investment.

THEORETICAL REVIEW

Uncertainty. The concept of uncertainty began to be widely discussed in economics when an economist name Frank Knight introduced his concept of uncertainty, known as Knightian Uncertainty. He explains the difference between "risk" and "real uncertainty." The concept of risk in Knightian uncertainty is a situation where the outcome of an event is unknown, but the probability can be measured accurately. Meanwhile, the concept of real uncertainty is a situation where the information needed cannot be known at all to determine an accurate probability. According to (Baker et al., 2016; Breuer et al., 2017) the concept of uncertainty from Knightian categorizes "real uncertainty" as " unmeasurable uncertainty." So it makes uncertainty is defined as the probability of uncertain events.

Furthermore, (Breuer et al., 2017) explained that the reason for the uncertainty of the Knightian is included in "unmeasurable uncertainty" because the probability of uncertain events is formed from the "degree of belief" as a quantitative form and does not have statistical information. However, the concept of uncertainty in the economy has now developed where several studies attempt to develop a measurement of uncertainty. One measure of uncertainty often used is the EPU from (Baker et al., 2016), formed from a news index related to economic policy.

Economic Policy Uncertainty. Economic policy uncertainty is one of the measurements developed to see the impact of policy uncertainty (Baker et al., 2016). Initially, the EPU index reflected the frequency of articles from ten well-known newspapers in the United States that had keywords such as "economy or economic," "uncertainty or uncertainty," "congress," "deficit," "Federal Reserve," "legislation," "regulation," and "white house."

Then this index is developed in three dimensions: historical data, cross-country, and more specific policy categories. This index wants to capture uncertainty about who will make economic policy, when the economic policy takes effect, and what the economic impact will be when a policy applies or not. This method has certain advantages as it has been measured in various countries and includes long historical data. This uncertainty model has been widely used in financial studies and has become one of the primary methods for measuring uncertainty (Baker et al., 2016). Several previous studies have used the method to prove the impact of uncertainty on the economy. Several of these studies explain the effect of uncertainty on financial stability, such as disrupting the flow of information, exacerbating adverse selection, and moral hazard problems that ultimately disrupt liquidity in the financial system (Phan et al., 2021). Meanwhile, another study explains that uncertainty affects stock market volatility and delays company investment (Baker et al., 2016; Wang et al., 2014).

Uncertainty Volatility. Uncertainty can be defined as the inability to predict the probability of a possible event occurring (Baker et al., 2016). That possible events have ambiguous or unknown probabilities (Breuer et al., 2017). However, (Goodell et al., 2021) suggest that there is uncertainty volatility. Uncertainty volatility can be defined as a condition where there is uncertainty about changes in the level of uncertainty currently studied. According to (Bloom, 2014), the EPU measurement itself is an imperfect blend between the measurement of uncertainty and risk. Based on that theory, it can be said that there is a variability of uncertainty. The variability of uncertainty needs to be examined because the uncertainty itself, as described by previous researchers, can affect company decisions (Baker et al., 2016).

Cash Holding. Cash is one of the most important assets for a company and is the most liquid asset. So in the use or hold of cash, companies need proper management by considering various aspects. A recent paper by (Chang and Yang, 2022) shows that firms with cash holding are more likely to survive and recover quickly from the financial crisis. The paper exhibit that cash holding help firms maintain their firm investment and R&D, so they can improve their operating performance. Furthermore, (Chen et al. 2018) point out that financially constrained firms will be more likely to invest and survive in the financial crisis period. This evidence agrees with cash as a precautionary motive, which argues that companies will set aside some cash reserve as a safeguard against any surprises.

Corporate Investment. Corporate investment is an investment decision made by a company. Investment decisions are important and need to be considered because they can affect the quality of company earnings. In addition, (Hsiao et al., 2014) show that investment at the optimal level will maximize firm value depending on the investment opportunity. Investment decisions can also serve as material for evaluating management performance. Through his research on companies in China and Taiwan, he found that investment decisions have a positive relationship with funding decisions and the financial performance of companies in Taiwan. According to, leverage which is negatively related to the level of company investment can harm companies that have low growth opportunities. Based on the investment impact that has been described, as well as previous research that has explained

the impact of uncertainty on investment, companies need to pay attention to corporate investments (Gulen and Ion, 2016).

The Relationship of Uncertainty with Cash Holding. Uncertainty has a far-reaching impact on the financial system. Uncertainty can affect stock market volatility, funding availability, and trading credit (Iqbal et al., 2019; Jory et al., 2020). These impacts can certainly affect the company's performance. The uncertainty that EPU has measured was also found to affect the company's future cash flow to become unstable so that companies tend to save cash to avoid financial shocks and maintain smooth operational activities (Phan et al., 2021). This finding is also consistent with the result that investment capital has a negative relationship with aggregate uncertainty. This happens because the cash can be used for future investments when uncertainty is reduced (Wang et al., 2014). In addition, the high cost of external funding makes companies tend to save more cash to maintain liquidity amid high uncertainty. This happens because managers tend to save cash when there is a possibility of a bad economy and use cash when the economy is improving to take advantage of growth opportunities (Chen et al., 2016).

The Relationship of Uncertainty with Cash Holding. Corporate investment affects many aspects of the company in terms of earnings quality, cash flow, and material for management evaluation (Lewellen and Lewellen, 2016). Investment usually has two characteristics. First, they are irreversible or can not be changed so that the expenditure will be entered as sunk costs. Second, investment can be delayed depending on new information regarding prices, market conditions, etc. This characteristic is the reason why companies need to be careful in making investment decisions. Based on (Bloom, 2014), fluctuations in uncertainty can affect market behavior. The study explains that high uncertainty can make companies delay recruitment and investment. Then several previous studies also have explained that uncertainty has a negative relationship with investment (Wang et al., 2014). This happens because when uncertainty increases, the value of the waiting decision is even greater, which ultimately makes the company reduce spending.

Hypothesis Development. Uncertainty can affect various aspects of macroeconomics (Istiak and Serletis, 2020; Sreedevi and Saranga, 2017; Wang et al., 2014). In addition, according to (Bloom, 2014), uncertainty can also exacerbate the recession and slow down the recovery. The impact of such great uncertainty finally makes uncertainty one of the topics widely discussed academically. Uncertainty is defined as the inability to determine the probability that an event will occur (Baker et al., 2016). Based on this broad definition, there is no way to measure uncertainty perfectly (Bloom, 2014). According to (Bloom, 2014), uncertainty is an imperfect combination of the measurement of uncertainty and risk. This is the basis for thinking that there is uncertainty about the level of uncertainty. According to (Bloom, 2014), fluctuations in uncertainty can affect companies by delaying recruitment and investment. (Neamtiu et al., 2014) also explained that the probability of an event that might occur in the definition of uncertainty is ambiguous or unknown. When this ambiguity increases, companies tend to reduce investment and increase cash holding (Demir and Ersan, 2017). In addition, previous studies also found that uncertainty has a negative relationship with investment (Wang et al., 2014). This happens because when uncertainty increases, the value of the option to wait increases, so companies tend to wait for additional

information and delay investment because of the irreversible characteristics of investments. So based on this theory, the following hypothesis can be drawn:

H₁: Uncertainty volatility will affect investment.

Based on several previous studies, it was revealed that under conditions of high uncertainty, companies tend to hold more cash (Demir and Ersan, 2017; Im et al., 2017). This occurs as a precautionary measure when faced with high uncertainty. In a period of heightened uncertainty, access to liquidity is limited, making companies save more cash. Another study from (Goodell et al., 2021) also shows that volatility in uncertainty affects cash holding. Based on this theory, the second hypothesis is as follows:

H₂: Uncertainty volatility will affect cash holding.

METHODS

This study used quantitative methods and unbalanced panel data obtained from company data from several ASEAN countries, namely Malaysia, Indonesia, Vietnam, Thailand, and Singapore. The data period used is from 2006 to 2020. All financial report data are collected from the database *S&P CAPITAL IQ* platform. The countries' specific variables such as rule of law and GDP growth are taken from the world bank website. Meanwhile, Economic Policy Uncertainty index data are taken from www.policyuncertainty.com website. The samples exclude companies that do not have complete data related to the research variable and also companies that are included in the financial industry.

Empirical Model. In this study, uncertainty about the level of uncertainty (uncertainty volatility) is defined as a situation where there is uncertainty about the level of uncertainty in the future that is currently being observed will change. To see the impact of uncertainty on corporate investment, the following empirical model is used (Goodell et al., 2021):

$$Inv_{i,t} = \beta_1 + \beta_2\sigma\_epu_{i,t} + \beta_3 size_{i,t} + \beta_4 leverage_{i,t} + \beta_5 roa_{i,t} + \beta_6 payout_{i,t} + \beta_7 mktbk_{i,t} + \beta_8 sls\_grwth_{i,t} + \beta_9 wrkng\_cap_{i,t} + \beta_{10} gdpgr_{i,t} + \beta_{11} rule\_law_{i,t} + fixed\ effects + \varepsilon_{i,t} \dots\dots(1)$$

To see the impact uncertainty volatility on the firm's cash holding, the following regression model is used (Goodell et al., 2021):

$$csh\_assts_{i,t} = \beta_1 + \beta_2\sigma\_epu_{i,t} + \beta_3 size_{i,t} + \beta_4 leverage_{i,t} + \beta_5 roa_{i,t} + \beta_6 payout_{i,t} + \beta_7 mktbk_{i,t} + \beta_8 sls\_grwth_{i,t} + \beta_9 wrkng\_cap_{i,t} + \beta_{10} gdpgr_{i,t} + \beta_{11} rule\_law_{i,t} + fixed\ effects + \varepsilon_{i,t} \dots\dots (2)$$

Where:
Inv = corporate investment
σ_epu = uncertainty volatility

size	= corporate size	
leverage	= firm's leverage ratio	
roa	= Return on Assets	
payout	= Dividend payout ratio	
mktbk	= Market to Book Ratio	
sls_grwth	= Sales Growth	
wrkng_cap	= Working Capital	
gdpgr	= countries' GDP growth	
rule_law	= countries' rule of law	
csh_assts	= Firm's Cash holding	

All dependent and independent variables operationalizations are presented in Table1.

Table 1. Variable Definitions

Variable	Name of Variable	Definition
Dependent Variables		
Inv	Corporate investment	Capital expenditure divided by total asset
csh_assts	Cash to total assets	Cash dan cash equivalent divided by total asset
Independent Variables		
σ_epu	Uncertainty volatility	The standard deviation of each country's EPU index. EPU index are taken from www.policyuncertainty.com
size	Size	Natural logarithm of the book value of the total asset
leverage	Leverage	Total debt divided by total asset
roa	Return on asset	EBIT divided by total asset
payout	Dividend payout	Total of common cash dividend plus share repurchases divided by total asset
mktbk	Market to book ratio	Market to book value of the firm
sls_grwth	Sales growth	Change of total sales each year
wrkng_cap	Working capital	Working capital divided by total asset
rule_law	Rule of law	Perceptions about how far agents have confidence and abide by the rules of society and the quality of contract enforcement. Source: world bank
gdpgr	GDP growth	GDP growth per capita of each country. Source: world bank

RESULTS

Descriptive Statistic. Table 2 shows the descriptive statistics of the research variables. The research variable data is taken from 2006 to 2020 by excluding companies in the financial industry. In the research variables used, winsorization has been carried out at the 1 percent level to overcome the outlier problem. Based on table 2, the total number of observations from this study was 27531. The empirical testing used the firm-level control variable and state-level control variables. The results of table 2 show that the average EPU volatility of the five countries is 10 percent. The average EPU in table 2 shows the number of 12.900 percent, which means that the variability level of uncertainty from the five countries at the time of the study is 12.900 percent.

Furthermore, the result shows that the average company in these five countries has a corporate investment level of 4.400 percent. The descriptive statistic table also recorded the average cash holding company in five countries at 10.900 percent. Also, the negative minimum values on company control variables such as return on assets, dividend payout, and sales growth can be seen in table 2.

Table 2. Descriptive Statistics

	Obs	Mean	Std. Dev.	Min	Median	Max
σ_epu	27531	0.100	0.065	0.000	0.090	0.370
csh_assts	27531	0.109	0.113	0.001	0.069	0.547
Inv	27531	0.044	0.053	0.000	0.026	0.278
size	27531	27.897	1.677	24.512	27.729	32.538
leverage	27531	0.423	0.214	0.037	0.414	1.028
roa	27531	0.056	0.090	-0.263	0.052	0.348
payout	27531	0.020	0.038	-0.063	0.007	0.203
mktbk	27531	1.323	1.029	0.380	1.003	7.164
sls_grwth	23512	0.105	0.337	-0.616	0.071	1.836
wrkng_cap	27531	0.207	0.236	0-.460	0.196	0.770
gdpgr	27531	4.152	3.302	-6.087	5.007	14.526
rule_law	27531	0.286	0.692	-0.720	0.120	1.880
epu	27531	0.129	0.102	0.000	0.110	0.610

Source : Data Processed by author

Table 3 shows the descriptive statistics of the research variables grouped based on country. The descriptive statistics included in Table 3 are the averages of the independent variables, the dependent variables, and the firm-level control variables. The data in the table is taken from data from 2607 companies from five different countries members of ASEAN, namely Indonesia, Malaysia, Vietnam, Thailand, and Singapore.

Table 3. Descriptive Statistics of Each country

Country	Obs	Firms	σ_epu	csh_assts	Inv	size	lev	roa	payout	mtb	sls_grwth	wrkng_cap
Malaysia	8521	834	0.108	0.107	0.037	27.751	0.374	0.046	0.019	1.210	0.101	0.243
Indonesia	3727	419	0.108	0.098	0.054	28.431	0.501	0.069	0.011	1.550	0.108	0.148
Singapore	3236	307	0.06	0.166	0.035	28.66	0.420	0.039	0.023	1.160	0.103	0.240
Thailand	4970	597	0.127	0.084	0.049	27.864	0.421	0.054	0.034	1.540	0.091	0.167
Vietnam	3058	450	0.066	0.106	0.056	26.972	0.471	0.089	0.036	1.170	0.135	0.215

Table 3 shows the level of EPU volatility in five countries tends to be lower than the results of EPU volatility in previous studies(Goodell et al., 2021). Thailand has the highest EPU volatility, and Singapore has the lowest EPU volatility. The descriptive statistics results show that, on average, companies in Singapore have the highest average cash holding and size but have the lowest corporate investment compared to the other four countries. In contrast, the lowest level of cash holding is owned by the state of Thailand. When viewed based on corporate investment, Vietnamese companies have the highest, while Singapore has the lowest. Vietnam has the highest dividend payout percentage, while Indonesia has

the lowest. Table 3 also shows that Indonesian companies have the highest average leverage compared to four other countries, which is at the level of 50.100 percent. Then from the company's average sales growth in each country, Vietnam has the highest growth. In comparison, Thailand has the lowest. In terms of working capital, it shows that Malaysian companies have the highest use of working capital, and Indonesian companies have the lowest.

Table 4. Correlation Between Variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) σ_epu	1.000												
(2) csh_assts	-0.070	1.000											
(3) Inv	0.050	-0.070	1.000										
(4) size	-0.040	-0.100	0.040	1.000									
(5) leverage	-0.020	-0.310	0.050	0.240	1.000								
(6) roa	0.010	0.170	0.160	0.080	-0.150	1.000							
(7) payout	-0.020	0.150	0.040	-0.080	-0.210	0.380	1.000						
(8) mktbk	0.040	0.140	0.150	0.020	-0.010	0.360	0.300	1.000					
(9) sls_grwth	0.050	-0.010	0.080	0.010	0.050	0.190	-0.020	0.060	1.000				
(10) wrkng_cap	-0.020	0.490	-0.170	-0.280	-0.620	0.230	0.180	0.040	0.010	1.000			
(11) gdpgr	0.020	-0.010	0.070	-0.100	0.03	0.110	-0.020	-0.020	0.150	0.030	1.000		
(12) rule_law	-0.220	0.190	-0.150	0.160	-0.12	-0.150	0.070	-0.100	- 0.030	0.110	-0.100	1.000	
(13) epu	0.740	-0.070	0.070	-0.05	0.010	0.010	0.020	0.080	0.040	-0.040	-0.030	-0.300	1.000

Source: Data Processed by author

Correlation Between Variables. Moreover, in Table 4, we can see the correlation between variables used in this research. The correlation table shows that EPU and EPU volatility has a negative correlation with cash holding. On the other hand, EPU and EPU volatility show a positive correlation with corporate investment.

Regression Result. Regression conducted in this study used the Fixed Effect Panel Data Regression with Driscoll-Kraay Robust Standard Error to overcome the problems of heteroscedasticity, autocorrelation, and cross dependence. In table 5 and table 6, the independent variable studied is the uncertainty volatility obtained from the standard deviation of the EPU (σ_epu). The empirical test conducted in table 5 uses corporate investment (Inv) as the dependent variable. While in table 6, cash holding (csh_assts) is the dependent variable. Both regressions use control variables such as size, leverage, roa, payout, mktbk, sls_grwth, wrkng_cap, rule_law, and gdpgr. The regression model in column (1) in tables 5 and 6 is only carried out between the independent variable and the uncertainty volatility. In column (2), the firm-level control was added to the regression model. Also, in column (3), macroeconomic and state-level control level variables were added. Finally, in column (4), the logarithm of the EPU is added. All model P-value F statistics show significance at the 1 percent level indicating the validity of our models.

Table 5. Regression Result of Variable Corporate Investment

	(1) Inv	(2) Inv	(3) Inv	(4) Inv
σ_epu	0.052***	0.043***	0.031***	0.049***
	(0.017)	(0.011)	(0.01)	(0.007)
size		-0.004**	0.000	0.000
		(0.001)	(0.001)	(0.001)
leverage		-0.019***	-0.023***	-0.023***
		(0.003)	(0.003)	(0.003)
roa		0.055***	0.045***	0.043***
		(0.009)	(0.007)	(0.007)
payout		0.017	0.015	0.013
		(0.015)	(0.016)	(0.017)
mktbk		0.005***	0.005***	0.005***
		(0.001)	(0.001)	(0.001)
sls_grwth		0.005**	0.004***	0.004***
		(0.002)	(0.001)	(0.001)
wrkng_cap		-0.039***	-0.040***	-0.040***
		(0.005)	(0.005)	(0.005)
gdpgr			0.001	0.001*
			(0.000)	(0.000)
rule_law			-0.022**	-0.025**
			(0.010)	(0.009)
epu				-0.019
				(0.014)
_cons	0.039***	0.158***	0.057*	0.047
	(0.004)	(0.038)	(0.028)	(0.031)
Regression Type	Fixed Effect Panel Data Regression with Driscoll-Kraay Robust Standard Error			
Observations	27,530	23,512	23,512	23,512
P-value	0.009	0.000	0.000	0.000
R²	0.005	0.031	0.038	0.039

All of the variables have been winsorized at level 1 percentage cut off
*** significant at level 1 percent, ** significant at level 5 percent, * significant at level 10 percent
Source: Data Processed by author

Table 6. Regression Result of Variable Cash Holding

	(1) csh_assts	(2) csh_assts	(3) csh_assts	(4) csh_assts
σ_epu	0.011	-0.015*	-0.017**	-0.034**
	(0.023)	(0.007)	(0.007)	(0.015)
size		-0.002	-0.001	-0.002
		(0.003)	(0.002)	(0.003)
leverage		0.033***	0.031***	0.031***
		(0.010)	(0.01)	(0.010)
roa		0.031**	0.029**	0.031**
		(0.014)	(0.013)	(0.013)
payout		0.023	0.027	0.028
		(0.048)	(0.044)	(0.044)
mktbk		0.010***	0.011***	0.010***
		(0.002)	(0.002)	(0.002)
sls_grwth		-0.005**	-0.004	-0.004*
		(0.002)	(0.002)	(0.002)
wrkng_cap		0.236***	0.236***	0.235***
		(0.008)	(0.008)	(0.008)
gdpgr			-0.001**	-0.001**
			(0.001)	(0.001)
rule_law			-0.017**	-0.014**
			(0.007)	(0.006)
epu				0.018

				(0.012)
_cons	0.107***	0.094	0.081	0.092
	(0.003)	(0.080)	(0.067)	(0.071)
Regression Type	Fixed Effect Panel Data Regression with Driscoll-Kraay Robust Standard Error			
Observations	27,531	23,512	23,512	23,512
P-value	0.005	0.000	0.000	0.000
R^2	0.000	0.184	0.188	0.184

All of the variables have been winsorized at level 1 percentage cut off
*** significant at level 1 percent, ** significant at level 5 percent, * significant at level 10 percent
Source: Data Processed by author

DISCUSSION

The association between the uncertainty volatility and corporate investment. The results of table 5 regression in columns (2), (3), and (4) show that the uncertainty of the uncertainty variable (σ_epu) has a significant positive effect at the level of 1 percent on the dependent variable of corporate investment. Overall, these results show that uncertainty volatility positively affects corporate investment, so our first hypothesis is not rejected. The results of table 5 also show a discrepancy with the result of (Gulen and Ion, 2016), which suggests a negative relationship between uncertainty and investment. This discrepancy can be caused by competition, information asymmetry, and opportunity cost.

Our results suggest that a firm can increase its corporate investment even though the level of economic policy uncertainty rises. The increase in corporate investment was influenced by companies competing for growth opportunities, thus encouraging companies to take investment opportunities (Belderbos et al., 2019). Then the investment can also be positive in the midst of uncertainty when there is information asymmetry. When uncertainty increases, the information asymmetry problem occurs. To overcome information asymmetry, companies invest in giving a signal about the good condition of the company to external parties. One way to give a positive signal is through investment. That situation accelerates the company's decision in investing. Moreover, firms will also want to invest during high uncertainty periods because of high opportunity costs. Investment delay will cause a firm's competitor to take the firm's growth opportunity and it will increase the firm's opportunity cost. When the marginal unit of capital generated is smaller than the opportunity cost sacrificed to delay investment, the company will accelerate investment despite the high uncertainty problem.

Furthermore, table 5 also shows the effect of control variables on corporate investment. It also shows the regression results on firm-level control variables such as leverage and working capital (wrkng_cap). These variables harm firm investment. This negative relationship is shown in the variables of leverage and working capital (wrkng_cap), which are significant to the company's investment at the level of 1 percent. This relationship shows that when leverage and working capital increase, it will impact the company to reduce corporate investment. Firms will want to choose between investing in short-term investments such as working capital or a long-term investment. Thus, higher working capital will decrease corporate investment. Moreover, the negative effect of leverage on corporate investment is in line with previous research, which found that increasing leverage can increase agency problems in private companies, ultimately leading to companies delaying investment (Khan et al., 2020).

The results of table 5 regression also show other control variables such as return on assets (ROA), market to book value (mktbk), and sales growth (sls_grwth) have a positive effect on company investment (Inv). Columns (2), (3), and (4) show that the variables roa, mktbk, and sls_grwth are significant at the 1 percent level. The variable ROA shows that increasing the company's performance can increase the company's investment. The results of the roa variable are in line with previous research, which shows that there is a linear relationship between return on assets and company investment (Wang et al., 2014). The results of the mktbk and sls_grwth variables show that when the company's market to book value and sales growth increase, the company's investment will also increase. Market to book ratio indicates a firm's value in the eye of external investors, thus higher value will influence firms to take more investment. While sales growth measure firms' growth opportunities. Firms with higher growth opportunities will want to invest more (Belderbos et al., 2019).

Variables payout and size are not significant with corporate investment (Inv) in table 5. So it can be concluded that dividend payments and corporate size do not affect company investment. Then when looking at the macroeconomic and state-level control variables, it can be seen that the gdpgr variable has a positive effect and rule_law harms corporate investment. Where column (4) shows that the gdpgr variable is significant at the 10 percent level, while the rule_law variable is significant at the 5 percent level through regression in columns (3) and (4). These results indicate that an increase in GDP growth will positively affect investment, while an increase in the rule of law will make companies reduce investment.

The association between Uncertainty volatility and corporate cash holding. Table 6 shows the results of the Fixed Effect Panel Data Regression with Driscoll Kraay Robust Standard Error with cash holding as the dependent variable. The results of table 6 column (2) show that the EPU standard deviation variable (σ_epu) has a significant negative effect at the 10 percent level on the dependent variable of cash holding. Columns (3) and (4) also show the significance between EPU volatility (σ_epu) to cash holding at a significance level of 5 percent. Overall, results across regression models affirm consistently a strong association between the volatility of uncertainty and cash holdings. So these results indicate that this study hypothesis is not rejected, where the volatility of uncertainty harms the company's cash holding. However, these results tend to differ from several previous studies, which showed that uncertainty encourages companies to save cash to maintain liquidity amid uncertainty (Demir and Ersan, 2017). We believe that this difference occurs because the company's motive to hold cash when uncertainty increases are divided into two. The first is the precautionary motive and the second is caused by the agency problem (Javadi et al., 2021). These two motives show contradictory results to each other.

Based on the precautionary motive, companies hold a lot of cash to avoid raising funds when external funding is expensive (Chen et al., 2018). Uncertainty can cause a higher cost of capital (Xu, 2020), and firms will prefer to choose internal financing than debt or equity financing in this period. Thus, firms with higher precautionary motives will be more likely to accumulate cash holding during a high uncertainty period.

Meanwhile, uncertainty can also negatively affects cash holding based on the agency problem argument. It happens because information asymmetry tends to increase when uncertainty increases. Under high uncertainty, there is a gap in the information held by

external parties and managers about the company. Moreover, a higher information asymmetry problem will increase a firm's agency problems (Javadi et al., 2021). Excess cash holding can cause managers to take detrimental actions such as overinvestment or pursuing personal gain. To reduce agency problems, external investors will request companies to reduce cash so that managers experience limitations in using company funding which ultimately builds managerial discipline to use the capital market to fund investments under the supervision of external parties (Javadi et al., 2021). Based on this explanation, even amid increased variability of uncertainty, uncertainty will decrease a firm's cash holding yields. To reduce information asymmetry and an effort to overcome agency problems, they will decrease cash holding. One way of cash holding usage is by investing in capital expenditure (Chang and Yang, 2022). Thus, these results conform with the results obtained in the first hypothesis, that uncertainty volatility increases corporate investment. It happens because the company tries to reduce information asymmetry when the uncertainty volatility increases through investing and reducing cash holding.

In addition, as we can see in table 6, among the control variables at the company level, the sales growth variable (sls_grwth) harms the dependent variable cash holding (csh_assts). Columns (2) and (4) respectively show the significance of sls_grwth to cash holding at the 5 percent and 10 percent levels. This result is consistent with previous research, which found that sales growth can reduce the company's motive to hold cash (Goodell et al., 2021). Furthermore, table 6 also shows that the size and payout variables are insignificant to cash holding. These results indicate that company size and dividend payments do not affect the company's cash holding. Table 6 also shows that variables such as return on assets (roa), leverage, market to book value (mktbk), and working capital (wrkng_cap) have a positive effect on cash holding. The variables wrkng_cap and leverage are listed in columns (2), (3), and (4) as significant at the 1 percent level and have a positive effect. The same thing was also found in the roa variable but at a significance level of 5 percent. The results of the wrkng_cap variable are in line with previous studies (Goodell et al., 2021).

In comparison, the results of the leverage variable show a different effect on cash holding (Goodell et al., 2021). This can happen because when leverage increases, the possibility of financial distress also increases. So that reason provides an incentive for companies to save more cash to reduce the risk of financial distress and bankruptcy costs. Based on the control variables at the country and macroeconomic levels, columns (3) and (4) show that the gdpgr and rule_law variables are significant at the 5 percent level and harm cash holding. This relationship shows that when there is an increase in GDP growth and the rule of law, the company's cash holding will decrease.

The results of tables 5 and 6, respectively in column (4), show that the variability of the EPU is significant to the company's investment and cash holding, while the EPU is not significant. Column (4) in Table 5 shows that uncertainty volatility is significant and has a positive impact on company investment. While column (4) table 6 shows that EPU variability harms the company's cash holding. This result is confirmed by (Goodell et al., 2021), who stated that the variability of uncertainty (uncertainty volatility) is economically more significant than the EPU itself. Our result indicates the importance of the volatility of uncertainty to corporate cash holding decisions.

CONCLUSIONS

This study aims to see the impact of uncertainty on the firm cash holding and corporate investment in several ASEAN countries such as Indonesia, Thailand, Singapore, Malaysia, and Vietnam. Based on the empirical testing result, it was found that uncertainty volatility has a positive relationship with corporate investment. This relationship reflects that companies in ASEAN countries tend to invest even though the variability of EPU is increasing. This occurs because of the influence of competition between companies to obtain growth opportunities, which ultimately reduces the waiting option's value. The increase in corporate investment is also caused by the company's efforts to reduce information asymmetry by giving signals to external parties through investment.

Furthermore, This study also found that EPU variability harms cash holding companies in ASEAN countries. This negative relationship occurs because the company is trying to mitigate the agency problem and reduce information asymmetry by lowering the company's cash level. It can be concluded that when the variability of uncertainty increases, the company tends to increase investment and decrease cash holding to reduce information asymmetry.

Lastly, our results also show that the variability of the EPU can significantly affect the company's investment and cash holding compared to the EPU itself. The results indicate the importance of the volatility of EPU on a firm's investment and cash holding decisions. While researching to see the effect of uncertainty variability on cash holding and company investment, the authors have a suggestion for further research. First, further researchers are suggested to develop further research on the measurement of the uncertainty volatility to see its impact on investment and cash holding companies. Second, further researchers are also suggested to research related to the uncertainty volatility between countries to see the influence of country culture and information asymmetry on research variables.

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