RIETI Discussion Paper Series 21-E-069

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https://www.rieti.go.jp/en/

RIETI Discussion Paper Series 21-E-069
August **2021**

Effects of Economic Policy Uncertainty on Corporate Investment and Strategic Cash Holdings: Evidence from Japan*

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Abstract

We empirically examine the effects of economic policy uncertainty (EPU) on the investment and cash holding behaviors of Japanese firms. We use the Japanese EPU index developed by Arbatli, Davis, Ito & Miyake (2019). They calculate the index based on the approach of Baker, Bloom & Davis (2016) as well as subcategories of EPU indices. We find that Japanese firms invest less and accumulate more cash when EPU becomes higher. We find that the uncertainty of fiscal and exchange rate policy are the key drivers of the negative impacts on corporate investment. However, we also find that exchange rate policy uncertainty only has short-term predictive power for investment. Additionally, we find that economic policy uncertainty in the US has negative spillover (contagion) effects on corporate investment in Japan. Our findings suggest that Japanese managers become more cautious in making investment decisions as a response to both higher US economic policy uncertainty and economic policy uncertainty in Japan.

Keyword: economic policy uncertainty, corporate investment, real option, cash holding
JEL Classification: D25, G31

* This study is conducted as a part of the Project "Corporate Finance and Firm Dynamics" undertaken at the Research Institute of Economy, Trade and Industry (RIETI), and is financially supported by the JSPS KAKENHI: Grant-in-Aid for Scientific Research B (Grant Number 21H00728) and Grant-in-Aid for Scientific Research A (Grant numbers: 21H04394). We are also grateful for a grant-in-aid from the Zengin Foundation for Studies on Economics and Finance. The authors appreciate helpful comments and suggestions from Iichiro Uesugi, Kaoru Hosono, Xu Peng, Hirofumi Uchida, Kazuhiko Ohashi, and from members of the RIETI project.

1. Introduction

Recent academic studies focus on the link between political factors and multiple aspects of the economy. Policy-related uncertainty is the path through which politics affects firm-level decisions. Economic policy uncertainty (EPU) is an uncertainty measure in politics, which differs from general economic uncertainty. Policy-related uncertainty can drive firm-level decisions in several dimensions, such as capital expenditure, finance, payout, and disclosure policies. Thus, it is worthwhile to investigate how EPU affects firm-level decisions.

Japan is a good testing ground to test the currency policy uncertainty and spillover (contagion) effects of EPU in other countries. First, Japan is the third largest and a trade-oriented open economy but does not have a key international currency. These characteristics suggest that businesses in Japan are exposed more to currency policy uncertainties than those in the U.S. Second, Japanese firms do not expose domestic policy uncertainty and the U.S. policy uncertainty because of the close linkage between the two countries' economies. These backgrounds enable us to test the influence of currency policy uncertainty and the EPU spillovers at the firm level.

This study empirically examines the effects of EPU on the investment and cash holding behaviors of Japanese firms. We conduct detailed analyses using subcategories of EPU indices, such as fiscal, monetary, trade, or currency policy. We also investigate the effects of policy uncertainty related to the exchange rate or spillover (contagion) effects from the U.S. EPU. Additionally, we examine the strategic motives of Japanese firms in holding more cash in response to a higher EPU.

Although the key challenge is how to measure EPU, it becomes more popular to use the aggregated policy-induced uncertainty index proposed by Baker, Bloom & Davis (2016). This index allows us to measure how much economic policy uncertainty increases at every point in time. We use the EPU index of Japan by Arbatli, Davis, Ito & Miyake (2019), who calculate the index based on the approach of Baker, Bloom & Davis (2016). Arbatli, Davis, Ito

& Miyake (2019) also calculate the uncertainty index of subcategories of economic policy: fiscal, monetary, trade, and currency policies. Thus, we can provide a more accurate picture of the impacts of economic policy uncertainty.

We find that Japanese firms invest less when the EPU increases. Using the subcategory of EPU, we show that fiscal and currency policy uncertainty are the main drivers of the negative impact on corporate investment. We also find the predictive power of economic policy uncertainty of exchange rate holds for corporate investment only in the short-run (i.e., up to half a year ahead, not a year). Additionally, we find negative spillover effects of economic policy uncertainty in the U.S. on investment in Japanese firms, suggesting that Japanese managers become more prudent in making investment decisions under higher United States economic policy uncertainty too, reflecting the direct influence of developments in the U.S. economy on the Japanese economy or the global impacts of the U.S. economic policies, or both.

We also shed light on the effects of EPU on corporate cash holdings. We find that Japanese firms hold more cash when the EPU is high. We note that the positive relationship between EPU and cash holdings for Japanese firms holds even after controlling for the effects of investment opportunities. Thus, it is unlikely that an increase in cash holdings is driven by the effects of lower investment opportunities proxied by Tobin's Q. Taken together, our findings suggest that managers become more prudent in making decisions under higher economic policy uncertainty of economy-wide prospects.

One potential concern is the confounding effects of the EPU and macroeconomic uncertainty measures. We also control for several macroeconomic measures, such as VIX in Japan (*vxj*). We note that VIX is a widely used measure of uncertainty related to future equity returns. Furthermore, it is often used as a broad economic uncertainty measure from stock investors' perspectives. We confirm that our main findings are robust even after controlling for the effects of macroeconomic uncertainty.

Previous studies provide evidence that firms tend to decrease investment and cut jobs

during periods of high EPU, whereas households tend to reduce consumption (Bernake, 1983, Bloom, 2009, Gulen and Ion, 2016, Julio and Yook, 2012, Bonaime, Gulen & Ion, 2018, Cao, Li & Liu, 2019)[2]. These studies primarily focus on the effect of uncertainty on tangible asset investments. We broadly examine corporate investment using several investment measures, including intangible assets and R&D expenditures. We also examine the effects of EPU on cash holdings, which might be a flip side of corporate investment, and investigating the determinants of corporate cash holdings is important, especially because the rising ratio of cash holdings on corporate balance sheets is a common phenomenon in many developed countries in recent years. Taken together, we aim to understand the relationship between cash holdings and investment in response to higher EPU.

The remainder of this paper is organized as follows. Section 2 develops our hypotheses, Section 3 describes our sample and presents our empirical methodologies, Section 4 discusses the empirical results, and Section 5 conducts robustness checks. Section 6 provides a summary of the observations and directions for further research.

2. Hypotheses

We test the dampening effect of the EPU on capital expenditures in Japan. As the real option theory predicts, if investment projects are irreversible, uncertainty shocks can give incentives to delay investment until the uncertainty resolves (Bernanke, 1983; Dixit and Pindyck, 1994). Julio and Yook (2012) show that investments decrease significantly during election years. Gulen and Ion (2016) find that EPU negatively impacts the level of firms' investments. Based on these arguments, we test whether firms decrease investment in the face of policy uncertainty in Japan.

[2] See Dai and Zhang (2019) for a comprehensive review of EPU topics.

H1*: Firms engage in less investment when they face higher EPU.*

We also examine Japanese firms' strategic motives in holding more cash in response to higher EPU. We investigate whether firms change their cash holdings in response to a higher EPU. There are two economic channels through which EPU affects corporate cash holdings (Duong, Nguyen, Nguyen &Rhee, 2020). First, EPU affects firms' financial constraints by raising the cost of capital or restricting access to the capital market. Recent studies also show that an elevated EPU will hinder and negatively affect bank credit, especially during a financial crisis (Hu and Gong, 2018; Berger, Guedhami, Kim & Li, 2021). Thus, constraints on financing cost or supply rationing might increase incentives to hold more cash. Japanese firms, even before the global financial crisis, experienced the domestic banking crisis in 1997-98. Watanabe (2007) investigates whether banks faced credit crunch owing to borrowing constraints set by banks and concludes that the credit crunch was significant during the banking crisis.

Second, the option value of waiting owing to investment irrepressibility materializes as higher cash holdings. According to the real options theory, firms would delay their investments and might have more cash strategically to take advantage of more profitable investment opportunities in the subsequent period. In both channels, we propose the following hypothesis:

H2*: Firms accumulate more cash when they face higher EPU.*

3. Empirical Analyses

3.1. Economic policy uncertainty index in Japan

We use the overall EPU index of Japan calculated by Arbatli, Davis, Ito & Miyake (2019) as a measure of the EPU. Arbatli, Davis, Ito & Miyake (2019) employed the methodology developed by Baker, Bloom & Davis (2016). Baker, Bloom & Davis (2016) first

calculate the index of EPU for the U.S. based on newspaper coverage of policy-related economic uncertainty. Later, they construct an uncertainty index for individual countries besides the U.S., including Japan (Australia, Brazil, Canada, Chile, China, Colombia, Croatia, France, Germany, Greece, Hong Kong, India, Ireland, Italy, Japan, South Korea, Mexico, Netherlands, Russia, Singapore, Spain, Sweden, the U.K., and the U.S.). They also calculate the global EPU index.

Although the EPU index for Japan calculated by Baker, Bloom & Davis (2016) is available, we decide to use the one by Arbatli, Davis, Ito & Miyake (2019) because they consistently calculate subcategories of the overall uncertainty index too: those for fiscal, monetary, trade, and exchange rate policies. We use the subcategories of EPU index to extend our analysis to study the idiosyncratic impacts of EPU concerning different policy categories. Table 1 shows how Arbatli, Davis, Ito & Miyake (2019) identify EPU articles in Japanese.

【Table 1】

3.2. Data

We obtain the EPU index from Baker, Bloom, and Davis's (BBD) website (https://www.policyuncertainty.com/index.html). We can also obtain the EPU index based on Arbatli, Davis, Ito & Miyake (2019) from this website. The website contains 25 publicly available EPU indices: index in 24 countries and global index. We download the spreadsheet containing Japanese monthly EPU indices and merge the data with the corporate financial dataset. Most Japanese macroeconomic data are obtained from the Nikkei NEEDS Financial Quest (FQ). GDP growth forecast is obtained from OECD data (https://data.oecd.org/gdp/gross-domestic-product-gdp.htm). To construct the election period variable, we refer to the "NHK Election WEB (*NHK Senkyo WEB*)" on the NHK (Japan Broadcasting Corporation: *Nihon Hoso Kyokai*) website (https://www.nhk.or.

jp/senkyo/database/history/).[3] This website describes all elections (House of Representatives and House of Councilors) held since 1989.[4] In the robustness test, we use the Volatility Index Japan (VXJ) to proxy stock market uncertainty. VXJ is obtained from the Center for Mathematical Modeling and Data Science website, Osaka University (MMDS, http://www-mmds.sigmath.es.osaka-u.ac.jp/structure/activity/vxj.php).

We obtain all the corporate financial data from the FQ. Our sample period starts in the fiscal year 2000 and is based on listed non-financial firms in Japan because the interpretation of financial statement information of financial firms differs from that of non-financial firms. We exclude firms that adopt accounting standards other than the Japanese accounting standard to exclude the potential effects of accounting standards on measured accruals (Soderstrom and Sun, 2007; Ahmed, Neel & Wang, 2013). Additionally, we exclude firms that do not have the necessary data for our empirical analyses. Our sample size is 56,620 firm-year observations during the fiscal years 2000–2018.

3.3. Regression models

To examine the effects of policy uncertainty on corporate investment, we estimate the following regression model:

$$investment_{it} = \alpha_0 + \alpha_1\, epu\ index + \Gamma \boldsymbol{z} + \Phi\, \boldsymbol{macro} + \boldsymbol{fe} + \varepsilon_{it}, \qquad (1)$$

where the dependent variable *investment* is the corporate investment. We use four measures of corporate investment: the change in property, plant and equipment plus depreciation and impairment (*Δppe*), capital expenditure reported in annual reporting (*capex*), expenses to purchase tangible and intangible assets (*tan+int*), and the sum of capital expenditure and R&D expenditure (*capex+rd*). All measures are scaled by the sum of lagged tangible and intangible

[3] NHK is a Japanese national broadcasting organization.
[4] The Japanese Diet is comprised of two houses: the House of Representatives and the House of Councilors. The House of Representatives is the lower house which the prime minister has the authority to dissolve.

assets. The variable of interest is one of the EPU indices (*epu index*). We use the overall EPU index (*epu*), then examine each categorical EPU index. The coefficient of EPU index α_1 captures the relationship between policy uncertainty and corporate investment. H1 predicts that the coefficient will be negative if firms are likely to reduce their capital expenditures in response to a higher EPU.

In the main analyses, EPU indices are 12 months averages up to six months (half a year) before the fiscal year-end. For instance, if an observation firm's fiscal year-end is December 2019, the EPU indices are 12 months averages from July 2018 through June 2019. However, there is no definite way to construct yearly based EPU indices for firms' fiscal year-end. Thus, we test whether the results of our main tests are robust to the alternative windows of the EPU index in our robustness check. In the analysis, we use one-quarter and one-year lagged EPU indices (Figure 1).

The vector $\boldsymbol{z}$ represents the firm-level control variables. This includes Tobin's q (q), operating cash flow (*cfo*), firm size (*size*), cash holdings (*cash*), and leverage (*lev*). The macroeconomic variables (***macro***) include a comprehensive set of macroeconomic control variables: national election indicator (*election*), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), doll-yen rate (*doll_yen*), consumer price index (*cpi*), annual GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). We also control for firm-fixed effects. The vector ***fe*** represents them. We report firm and year multi-way clustered standard errors. Table 2 lists the definitions of variables.

【Figure 1】

【Table 2】

Next, to test Hypothesis 2, that is, the effects of EPU on corporate cash holdings, we estimate the following equation:

$$\Delta cash_{it} = \beta_0 + \beta_1\, epu\ index + \Gamma \boldsymbol{z} + \Phi\, \boldsymbol{macro} + \boldsymbol{fe} + \varepsilon_{it,} \qquad (2)$$

where the dependent variable is the change in cash holdings from the previous period ($\Delta cash$). The variable of interest is the EPU index (*epu index*). This model also includes control variables and fixed effects, which we control in Model (1). The coefficient on EPU index β_1 captures how managers change cash holdings in response to economic policy uncertainty. Hypothesis 2 predicts that the coefficient is positive.

To further test how firms accumulate their cash holdings, we examine the sensitivity of cash holdings to the change in internal capital. The increase of cash in hand suggests that managers have more precautionary incentives to mitigate financial constraints. However, if economic policy uncertainty increases internal capital change but decreases corporate investment simultaneously, those results do not necessarily indicate evidence of precautionary motives for cash holdings. We need to test if the decrease in investment increases cash holding. To examine this potential problem, we focus on the sensitivity of cash holding to internal capital change against the increase of economic policy uncertainty. Almeida, Campello & Weisbach (2004) show that this sensitivity is higher for financially constrained firms. Following the specifications of Almeida, Campello & Weisbach (2004) and Duong, Nguyen, Nguyen & Rhee (2020), we estimate the following regression model:

$$\Delta cash_{it} = \gamma_0 + \gamma_t + \gamma_1\, epu\ index \times cfo + \Gamma \boldsymbol{z} + \Phi\, \boldsymbol{macro} + \boldsymbol{fe} + \varepsilon_{it,} \qquad (3)$$

where the variable of interest is the interaction term between the EPU indices and internal capital (*epu index* × *cfo*). This model also includes control variables and fixed effects, which we use in Model (1). Following Gulen and Ion (2016), we include year-fixed effects instead of *the epu index* variable because we are no longer interested in estimating the average effect of EPU on investment. Rather, by including year-fixed effects, we can control any macroeconomic factors that may confound the effects of policy uncertainty. The coefficient of

the cross-term of EPU indices γ_1 captures how the sensitivity of corporate cash holdings to changes in internal capital in response to EPU. Our hypothesis predicts this positive result.

4. Results

4.1. Descriptive statistics

Figure 2 shows the time variations of the Japanese EPU indices across the sample period. As Arbatli, Davis, Ito & Miyake (2019) argue, the EPU indices spike several times around periods of policy uncertainty shocks. For instance, the overall EPU index (*epu*) sharply increases in the periods a) April to September 2001, b) October 2008 to March 2009, c) September 2010, d) December 2011, and e) July 2016. Prime ministers resigned in periods a), c), and d). In period b), Lehman Brothers went bankrupt, and the Bank of Japan lowered the policy interest rate. The EPU index reacts to the Greek crisis and Twisted Diet election outcome in period c), the U.S. debt-ceiling crisis, concerns about the E.U. debt crisis, monetary easing, and Japan's foreign exchange market intervention. In period e), the consumption tax hike was delayed, and Leavers won by 52% to 48% in the Brexit referendum.

【Figure 2】

Focusing on recent periods, trade policy uncertainty (*epu_tp*) fluctuates more, especially after 2017. Trade policy EPU peaks in March 2017 at 430.3. The uncertainty then sharply declines in February 2018 (121.7). During this period, Donald Trump became the president of the United States in January 2017 and stated that the U.S. would leave the Trans-Pacific Partnership (TPP). These events are likely to increase Japanese trade policy EPU since the TPP is one of the most important issues for Japanese trade policy. Trade EPU policy increases again from March 2018. This might reflect the U.S. tariffs on steel and aluminum imports, and China retaliates (Davis 2018; Arbatli, Davis, Ito & Miyake, 2019).

Panel A of Table 3 presents the descriptive statistics of the variables we use in the main analysis. Panel B reports the correlation matrix. We focus on the correlation between overall EPU (*epu*) and macroeconomic variables here. The U.S. news-based EPU index (*us_epu*) strongly correlates with the Japanese overall EPU index (ρ = 85.4%), suggesting Japanese and U.S. EPUs comove. The EPU variables are positively related to election period indicators (*election*). This positive relationship suggests that EPU is higher during election periods. Market return (*ret_topix*) is low, and market volatility (*vol_topix*) is high during higher EPU periods. This indicates that EPU worsens the stock market conditions. The currency rate (*doll_yen*) is negatively related to the EPU variables, suggesting that a strong Yen (decrease in *doll_yen*) increases EPU. The Consumer Price Index (*cpi*) is positively related to EPU variables. This will be consistent with the positive relationships between the EPU index and GDP growth (*gdp_growth*) and GDP growth forecast *(gdp_forecast*) are consistent with prior studies that Ito (2016) also points to. The EPU variables are positively associated with the financial crisis indicator (*fc*), suggesting a spike in EPU in the financial crisis. Finally, VXJ (*vxj*) positively correlates with the EPU index. This result indicates that both the EPU index and VXJ capture some common aspects of economic uncertainty.

【Table 3】

4.2. Empirical results

Panel A of Table 4 presents Model (1) benchmark results using overall EPU (*epu*) as the key independent variable. Column 1 shows the simple regression of the overall EPU. One potential concern is that the EPU variable (*epu)* may capture the effects of poor investment opportunities. We include proxies for investment opportunities in columns 2 to 5 and firms' characteristic variables to address this concern. Another concern is that the EPU index may capture the effects of economic uncertainty, such as financial crisis. To mitigate this concern,

we include several proxies for macroeconomic measures of uncertainty, as explained in Section 3.3.

Row 1 shows that the coefficient of EPU is negative and statistically significant across all specifications. The results indicate that firms are less likely to invest when EPU increases, which is the same result as Gulen and Ion (2016). If the EPU index increases by 100% in column 5, then the results indicate that if we evaluate it at the mean value of the investment, the investment decreases by approximately 22% (i.e., 0.0408/0.1892) of the investment variables, which is economically significant.

We also use several alternative measures for the investment variables in Panel B of Table 4. The coefficients on the overall EPU are negatively significant, except for column 1. Column 1 only covers tangible assets, which indicates that EPU significantly affects corporate investment in intangible assets and R&D expenditures. One possible interpretation is that intangible assets and R&D expenditures would reflect firms' strategic intentions under uncertainty more strongly than other types of assets. This seems to be consistent with the real option argument.

【Table 4】

As for the control variables, the coefficient of *q* is positive across all columns, implying that firms with more investment opportunities engage in investment. The coefficient on cash holdings is positive and significant, indicating that firms with more cash are likely to invest more. This finding counters the argument that firms accumulate cash as a result of cutting capital expenditure. We note that the coefficient of *vol_topix* is negatively significant, suggesting that the impact of EPU still exists even after controlling for the effects of uncertainty expressed as stock market volatility.

The above analysis shows that the EPU decreases corporate investment, on average.

However, the change in EPU may not have significant effects when the level of EPU is too low. As we do not know a priori about the EPU index threshold that impacts on firm behaviors, we employ dummy variables, *epu_ 1st quantile*, *epu_ 2nd quantile*, *epu_3rd quantile*, and *epu_4th quantile*, which are constructed based on the epu variable. They are dummy variables that take one if *epu* belongs to the first (i.e., epu is equal to or greater than the zero percentile and smaller than 20 percent), second, third, fourth, or fifth quantiles, respectively. We use *epu_1st quantile* as the baseline (default). Table 5 presents the empirical results of the dummy variable version of the EPU index.

【Table 5】

Row 1 shows that the coefficients of *the epu_2nd quantile* are insignificant, but the coefficients of the epu_3rd to 5th quantiles are generally negative and statistically significant. This result implies that firms are more likely to reduce investment when *epu* is above the sample median, which is consistent with the view that firms reduce investment when EPU is relatively higher. We note the statistical significance of 4th quantile in columns 2 to 4. The quantitative impact of EPU is larger when the EPU index is above 60 percent. The results are also in line with the previous view of the relationship between investment and policy-induced uncertainty.

Next, we conduct detailed analyses using subcategories of EPU indices for fiscal policy (*epu_fp*), monetary policy (*epu_mp*), trade policy (*epu*), and exchange rate (*epu_cp*). Using this estimation, we see which type of EPU is the source of the adverse effects on corporate investment. Table 6 presents the results based on the detailed sub-categories of EPU.

【Table 6】

Column 1 shows that the coefficient of *epu_fp* is negative and statistically significant. Column 4 shows that the coefficient of *epu_cp* is also negative and statistically significant. In contrast, the coefficients of *epu_mp* and *epu_tp* are insignificant. These results indicate that the policy uncertainty of fiscal policy and the exchange rate are the key drivers of the negative impact on corporate investment. The qualitative results concerning other variables are the same as those in Tables 4 and 5.

Table 7 presents the results for testing Hypothesis 2, which uses the change in cash holdings ($\Delta cash$) as a dependent variable instead of investment. In column 1, row 1 shows that EPU is positive and marginally significant. In columns 2, 3, and 4, the estimation results show that firms accumulate cash holdings when the policy uncertainty related to fiscal policy, monetary policy, and trade policy is high. If the EPU index increases by 100% in column 1, then the results indicate that if we evaluate it at the mean value of the change in cash holdings, cash holdings increase by approximately 136% (i.e., 7% of the stock level of cash holdings), which is economically significant.

【Table 7】

Row 2 shows the empirical results for the cross-term of EPU with operating cash flow, which are positively significant. The results indicate that firms with high operational cash flows are more sensitive to policy uncertainty and have more cash holdings. Thus, the results seem to be consistent with the financial constraint hypothesis that cash-rich firms accumulate more cash with precautionary incentives when EPU becomes high. Row 3 shows that the coefficients on Tobin's q are positive and statistically significant. They imply that the positive relationship between EPU and cash holdings for Japanese firms holds even after controlling for the effects of investment opportunities. Thus, it is unlikely that the effects of lower investment opportunities drive an increase in cash holdings.

5. Extensions and Robustness Checks

5.1. Effects of foreign economic policy uncertainty

We explore the relationship between EPU in other countries and corporate investment in Japan. We use the U.S. EPU index instead of the Japanese EPU index to determine whether it also affects investment behavior of Japanese firms.

Column 1 of Table 8 presents the results for the effects of the U.S. EPU. The coefficient on *us_epu* is negative and statistically significant, indicating that there exist adverse spillover effects of policy uncertainty in the U.S. on investment of Japanese firms. Additionally, we use the residual part of the following regression result (*residual_epu*), which consists of a cleaner measure of domestic factors of the Japanese policy uncertainty.

$$epu\ index = \phi_0 + \phi_1\ us\_epu + \Gamma \boldsymbol{z} + \Phi\ \boldsymbol{macro} + \boldsymbol{fe} + \varepsilon_{it,} \qquad (4)$$

The idea here borrowing from Gulen and Ion (2016) is that the residual part of the EPU of equation (4) purely captures the domestic factors of policy uncertainty in Japan. We find that the coefficient of *residual_epu* in column 2 is insignificant, and thus, there is no explanatory power of the unique Japanese portion of policy uncertainty for investment.

We also conduct similar analyses by using the subcategory index of EPU in equation (4). We note that Japanese EPU might include uncertainty component of other countries such as U.S. Thus, we regress each subcategory of Japanese EPU on the counterpart of U.S. EPU to obtain the residual component of Japanese subcategory EPU. We use the residuals as domestic policy uncertainty related to each category.[5] Columns 3 to 5 show that the coefficient on *residual_epu* for fiscal policy is statistically significant, indicating that the cleaner domestic policy uncertainties related to fiscal policy are the main factors of Japanese domestic policy

[5] In this test, we cannot estimate the residual component of currency policy uncertainty because U.S. EPU regarding to currency policy is not available.

uncertainty.

【Table 8】

5.2. Robustness checks

We conduct the same analyses as Table 4 by adding year-fixed effects, VXJ (*vxj*), and the Global Financial Crisis dummy (*fc*) as our robustness check. Additionally, we replicate Table 4 using firms' semi-annual financial data instead of annual financial data. Table 9 presents the results of this study. Not surprisingly, the coefficients of *vxj* and *fc* are insignificant. We include the year fixed effects, and some of them absorb the significance of these variables. Nonetheless, the EPU variables are qualitatively the same as those in Table 4.

【Table 9】

In the main analyses, we use 12 months averages of the EPU indices up to six months before the timing for dependent variables. Figure 1 describes the definition of the EPU variable in the main analysis. However, economic policy uncertainty might have different effects on the economic outcomes in different windows. For instance, prior studies show that economic policy uncertainty affects aggregate corporate investment or economic outcomes following six months (BBD 2016; Arbatli, Davis, Ito & Miyake, 2019). To check the robustness of our findings, we change the construction of the EPU indices.

Table 10 presents the main analysis results in Table 4 by using one-quarter lag, half-year, or year lag of *epu_index* as a robustness test. We do not report the results of control variables for brevity. We examine whether the results of the main tests are robust to the window of EPU index as our robustness test. Regarding the coefficients of *epu_index* and *epu_fp* are statistically significant across all the specifications. In contrast, the coefficients of *epu_cp* are

statistically significant in columns (13) and (14) but insignificant in column (15). Here the window of *epu_cp* is crucial. Our interpretation is that the impact of the policy uncertainty of currency policy holds in the short-run, i.e., till half-year, and thus predictive power of policy uncertainty of exchange rate for corporate investment decreases within a year.

【Table 10】

6. Conclusion

We empirically examine the effects of EPU on the investment behavior of Japanese firms. We use the EPU index of Japan by Arbatli, Davis, Ito & Miyake (2019), who calculate the subcategories of EPU indices based on the approach of Baker, Bloom & Davis (2016). We find that Japanese firms invest less and accumulate more cash when EPU is high, and the policy uncertainty of fiscal and currency policy are the key drivers for the negative impact on corporate investment. However, we note that the predictive power of policy uncertainty of exchange rate holds for corporate investment only in the short-run. We also find adverse spillover effects of policy uncertainty in the U.S. on investment by Japanese firms. Our findings suggest that Japanese managers become more prudent in making investment decisions under higher U.S. policy uncertainty and policy uncertainty in Japan.

One potential concern of our analyses is the endogeneity of the EPU index. We attempted to overcome this problem by estimating the exogenous part of the Japanese EPU index. Additionally, we investigated the relationship between U.S. policy uncertainty and investment in Japan. We find the same qualitative results as those of the Japanese EPU index.

We also find that Japanese firms hold more cash when the EPU is high. We note that the positive relationship between EPU and cash holdings for Japanese firms holds even after controlling for the effects of investment opportunities. Thus, it is unlikely that the effects of lower investment opportunities drive an increase in cash holdings. Taken together, our findings

suggest that managers become more prudent in making decisions under the higher economic policy uncertainty.

We have not explicitly explored the effects of corporate governance mechanisms on the relationship between EPU and corporate investment and cash holding. For example, we can examine the effects and implications of internal and external governance, such as board structures or bank-firm relationships in Japan. These directions will be an important topic for future research.

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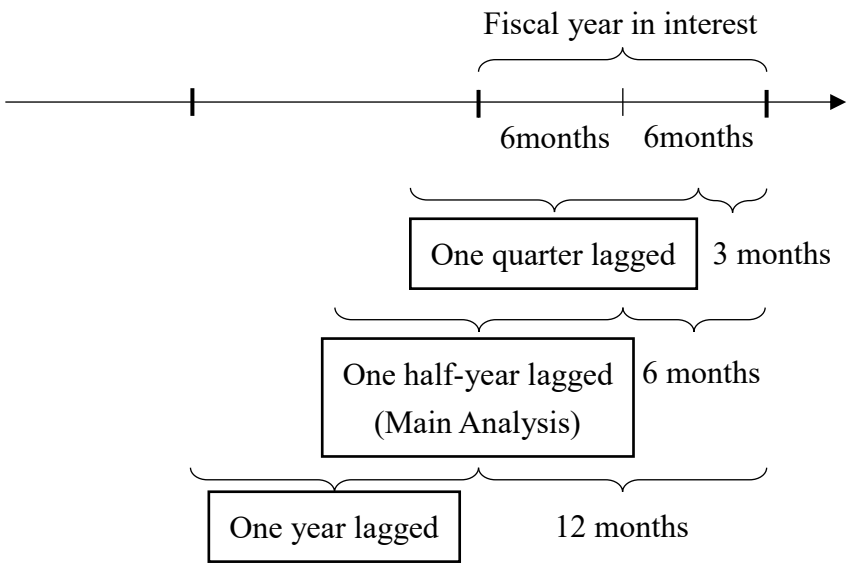

Figure 1. EPU construction:
This figure presents the definitions of different constructions of EPU indices.

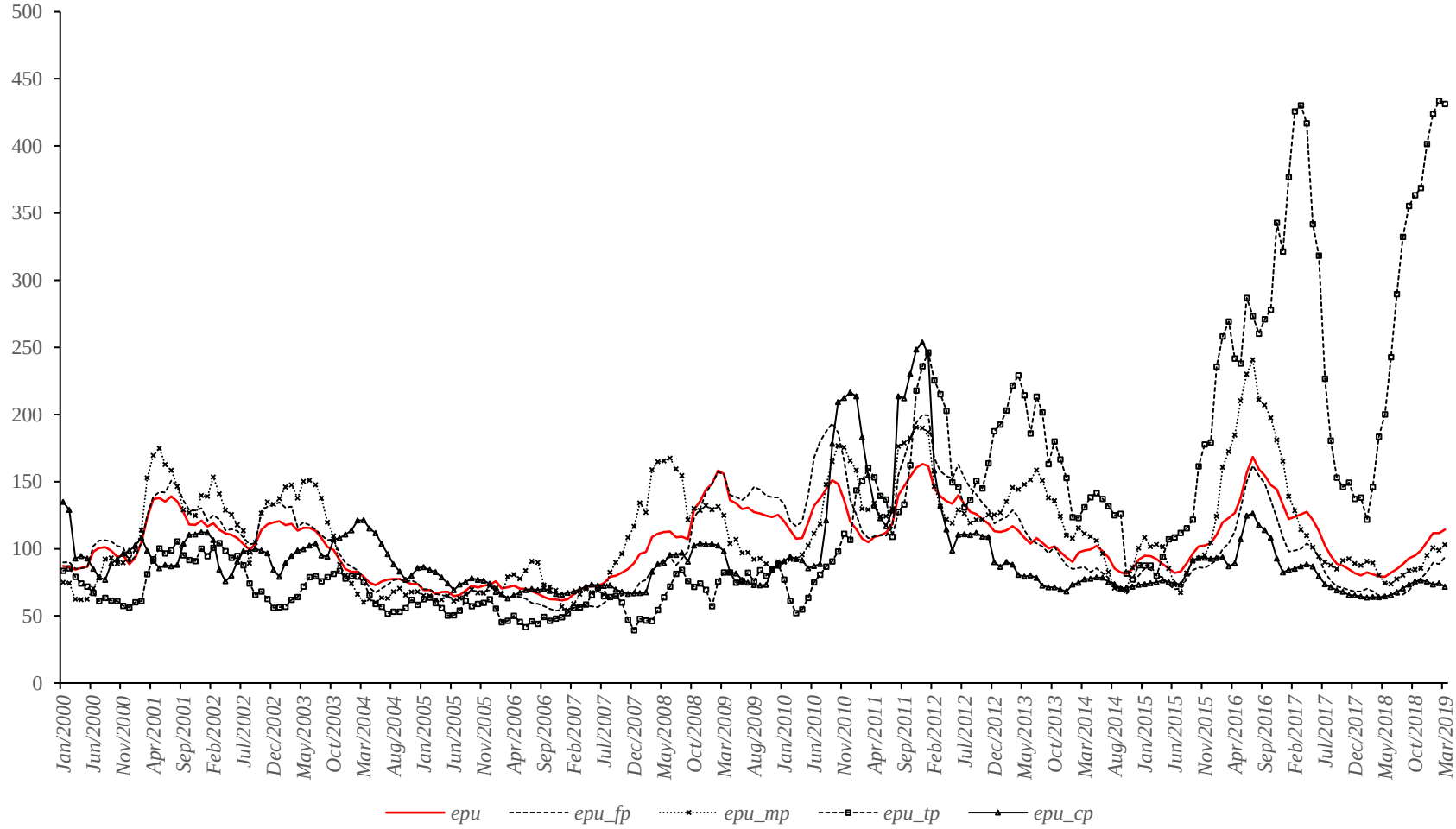

Figure 2. Japanese EPU index (6 month moving average):
This graph represents the time trend of six month moving average Japanese EPU indices from January 2000 to March 2019.

Table 1. EPU terms in Japanese:
This table describes how Arbatli, Davis, Ito & Miyake (2019) identify EPU articles in Japanese. The second column shows the terms in each group: "Economic," "Policy," and "Uncertainty." The third column describes how Arbatli, Davis, Ito & Miyake (2019) translate BBD's methodology into Japanese newspapers.

	English (BBD 2016)	Japanese (Arbatli, Davis, Ito & Miyake, 2019)
Economic	: "economic" or "economy";	: "経済 (economy)" or "景気 (business condition)"
Uncertainty	: "uncertain" or "uncertainty";	: "不確実 (uncertain/uncertainty)" or "不透明 (vague)"
Policy	: One or more of "Congress", "deficit", "Federal Reserve", "legislation", "regulation", and "White House".	: Table 1 in Arbatli, Davis, Ito & Miyake (2019) e.g., "日本銀行 (Bank of Japan)"; "国債 (sovereign bond)" ; "構造改革 (structural reform)"; "税 (tax)"; "国会 (congress)"; or "法案 (bill)"; "衆議院 (House of Representative)"; 参議院 (House of Councilors)"; "官邸 (Official Residence of the Prime Minister)"; "首相 (prime minister)"; or "連邦準備 (Federal Reserve)"

Table 2. Variable definition:
This table describes the definitions and data sources of the variables used in this study.

Variable	Definition	Source
epu	: Natural logarithm of moving 12 months average of overall EPU.	BBD HP
epu_fp	: Natural logarithm of moving 12 months average of fiscal policy EPU.	BBD HP
epu_mp	: Natural logarithm of moving 12 months average of monetary policy EPU.	BBD HP
epu_tp	: Natural logarithm of moving 12 months average of trade policy EPU.	BBD HP
epu_cp	: Natural logarithm of moving 12 months average of currency policy EPU.	BBD HP
us_epu	: Natural logarithm of moving 12 months average of US news based EPU.	BBD HP
unex_epu	: The residual from the estimation model regressing *epu* on *use_epu*, which represents the idiosyncratic component of Japanese EPU independent from US EPU.	BBD HP
Δppe	: The change in property, plant and equipment plus depreciation and impairment scaled by the sum of lagged tangible and intangible assets.	FQ
capex	: Capital expenditure scaled by the sum of lagged tangible and intangible assets.	FQ
tan+int	: The purchase of tangible and intangible assets scaled by the sum of lagged tangible and intangible assets.	FQ
capex+rd	: The sum of capital and R&D expenditure scaled by the sum of lagged tangible and intangible assets.	FQ
Δcash	: The change in cash holding scaled by the sum of lagged tangible and intangible assets.	FQ
q	: The sum of market value of stock, long- and short-term debt scaled by the book value of shareholder capital, long- and short-term debt.	FQ
cfo	: Operating cash flow scaled by the sum of lagged tangible and intangible assets.	FQ
size	: Natural logarithm of lagged total assets (million JPY).	FQ
cash	: The sum of cash and short-term security scaled by the sum of lagged tangible and intangible assets.	FQ
lev	: The sum of short- and long-term debt scaled by the sum of lagged tangible and intangible assets.	FQ
election	: Indicator taking one if the fiscal year contains election periods, zero otherwise. We define the election periods as the periods from House of Representative dissolution through election date.	NHK
ret_topix	: 12 months TOPIX return.	FQ
vol_topix	: 12 months TOPIX return volatility.	FQ
doll_yen	: 12 months average of US Dollar to Japanese Yen ratio.	FQ
cpi	: 12 months average of Consumer Price Index.	FQ
gdp_growth	: 12 months growth of GDP.	FQ
gdp_forecast	: OECD GDP growth forecast.	OECD
fc	: Financial crisis indicator taking one if fiscal year belongs to	

	the periods from 2008 July through 2009 December, zero otherwise.	
vxj	: Natural logarithm of 12 months average of VXJ.	MMDS

Table 3. Descriptive statistics and correlation matrix:
Panel A reports the descriptive statistics of the variables used in our analyses. Panel B reports the correlation matrix between the variables. We winsorize all firm-level variables dropped at the 1% and 99% levels.

Panel A: Descriptive statistics

Variables	Mean	SD	1st Quartile	Median	3rd Quartile
Δppe	0.1781	0.2725	0.0464	0.1089	0.2160
capex	0.1726	0.2365	0.0459	0.1043	0.2002
tan+int	0.1892	0.2751	0.0540	0.1098	0.2065
capex+rd	0.2573	0.4071	0.0668	0.1480	0.2819
Δcash	0.1117	1.1941	-0.0697	0.0083	0.1195
epu	4.6229	0.2291	4.4701	4.6742	4.7985
epu_fp	4.5938	0.3045	4.3035	4.5552	4.8592
epu_mp	4.6741	0.2889	4.4608	4.8123	4.8948
epu_tp	4.5936	0.5339	4.1572	4.3764	5.0076
epu_cp	4.5219	0.2563	4.3074	4.4994	4.6098
us_epu	4.7388	0.2833	4.5287	4.8173	4.9928
q	1.0719	1.5616	0.2448	0.5050	1.1790
cfo	0.2854	1.2373	0.0676	0.1760	0.3455
size	8.9815	2.0065	7.8489	9.0242	10.2101
cash	2.0616	5.4130	0.2308	0.5402	1.3339
lev	0.9729	1.8511	0.1367	0.5399	1.0147
election	0.0555	0.2290	0	0	0
ret_topix	0.0515	0.2470	-0.1455	0.0099	0.2376
vol_topix	0.0125	0.0033	0.0104	0.0122	0.0144
doll_yen	4.6557	0.1351	4.6057	4.7063	4.7449
cpi	97.9215	1.3792	96.9167	97.2917	99.2167
gdp_growth	0.0042	0.0033	0.0028	0.0054	0.0062
gdp_forecast	0.0088	0.0263	-0.0021	0.0116	0.0234
fc	0.0648	0.2462	0	0	0
vxj	3.1846	0.2275	3.0459	3.2021	3.3079

Panel B: Correlation matrix

		Δppe	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	*capex*	0.009											
(2)	*tan+int*	0.446	0.117										
(3)	*capex+rd*	0.077	0.137	0.058									
(4)	*Δcash*	0.207	0.003	0.220	-0.176								
(5)	*epu*	0.003	-0.043	-0.012	0.000	-0.004							
(6)	*epu_fp*	0.002	-0.054	-0.016	-0.006	-0.004	0.941						
(7)	*epu_mp*	0.003	-0.039	-0.009	0.000	-0.004	0.876	0.771					
(8)	*epu_tp*	0.006	0.028	0.006	0.022	0.002	0.526	0.362	0.535				
(9)	*epu_ep*	0.004	-0.033	-0.009	-0.005	-0.002	0.636	0.751	0.544	0.233			
(10)	*us_epu*	0.002	-0.031	-0.009	0.005	-0.001	0.854	0.780	0.805	0.655	0.479		
(11)	*election*	0.008	-0.112	-0.006	-0.011	0.001	0.192	0.174	0.171	0.118	0.130	0.216	
(12)	*ret_topix*	0.001	0.052	0.013	0.011	0.008	-0.587	-0.540	-0.526	-0.032	-0.285	-0.491	-0.068
(13)	*vol_topix*	-0.001	-0.043	-0.011	-0.009	-0.003	0.539	0.516	0.299	-0.031	0.126	0.298	0.219
(14)	*doll_yen*	-0.004	0.007	0.003	0.000	-0.001	-0.525	-0.594	-0.373	-0.239	-0.677	-0.422	-0.121
(15)	*cpi*	-0.001	0.022	0.003	0.013	-0.005	0.091	-0.078	-0.021	0.315	-0.232	0.081	-0.118
(16)	*gdp_growth*	-0.003	0.278	0.016	0.038	0.001	-0.030	-0.011	-0.070	0.050	-0.021	-0.003	-0.414
(17)	*gdp_forecast*	0.001	-0.007	0.001	0.003	0.002	-0.096	0.013	-0.228	0.067	-0.007	-0.101	-0.106
(18)	*fc*	-0.002	-0.031	-0.004	-0.009	-0.005	0.116	-0.025	0.200	-0.242	-0.081	0.052	0.140
(19)	*vxj*	-0.002	-0.055	-0.015	-0.014	-0.004	0.656	0.631	0.558	-0.070	0.298	0.477	0.204
(20)	*q*	0.006	-0.002	0.011	0.001	0.002	-0.012	-0.012	-0.010	-0.007	-0.008	-0.012	-0.001
(21)	*cfo*	0.107	0.011	-0.041	-0.109	-0.517	0.007	0.007	0.006	0.003	0.006	0.007	0.002
(22)	*size*	-0.030	-0.170	-0.104	-0.075	-0.035	0.007	0.017	0.004	-0.026	0.012	0.000	-0.003
(23)	*cash*	0.280	0.040	0.122	0.557	-0.280	0.001	-0.008	0.002	0.027	-0.010	0.006	0.004
(24)	*lev*	0.063	-0.003	0.005	0.004	0.037	-0.004	-0.003	-0.004	-0.005	-0.001	-0.004	0.004

		(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
(13)	*vol_topix*	-0.512											
(14)	*doll_yen*	0.153	-0.207										
(15)	*cpi*	-0.032	0.074	0.445									
(16)	*gdp_growth*	0.041	0.001	-0.019	0.001								
(17)	*gdp_forecast*	0.157	0.049	0.019	0.019	0.241							
(18)	*fc*	-0.318	0.173	-0.120	-0.067	-0.255	-0.567						
(19)	*vxj*	-0.543	0.754	-0.228	-0.030	-0.083	-0.236	0.410					
(20)	*q*	0.008	-0.008	0.013	0.002	-0.009	0.001	-0.004	-0.008				
(21)	*cfo*	-0.005	0.001	-0.005	0.002	0.002	-0.002	0.003	0.004	-0.004			
(22)	*size*	-0.015	0.012	0.017	0.002	0.003	-0.001	-0.004	0.022	-0.016	0.020		
(23)	*cash*	0.009	-0.007	0.004	0.020	-0.005	0.006	-0.007	-0.016	0.007	-0.105	-0.182	
(24)	*lev*	0.001	-0.002	0.004	-0.001	-0.007	0.001	-0.002	-0.002	0.000	-0.009	-0.036	0.029

Table 4 Economic policy uncertainty and corporate investment:
Panel A: Baseline analyses

This table presents Model (1) results, regressing corporate investment on the overall EPU index. The variable of interest is the overall EPU index (*epu*). The dependent variable is investment in tangible and intangible assets (*tan+int*).We expand firm-level control variables from columns 2-4: Tobin's q (*q*), cash flow from operation (*cfo*), firm size (*size*), cash holding (*cash*), and leverage (*lev*). We also include the control variables for macro-level variables in column 5: House election period indicator (election), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), dollar-yen rate (*doll_yen*), consumer confidence index (*cpi*), GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). Firm-fixed effects are also controlled. Standard errors in parentheses are obtained by clustering at the firm-year level. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively, using a two-tailed test.

			tan+int		
	(1)	(2)	(3)	(4)	(5)
epu	**-0.0522****	**-0.0469****	**-0.0478*****	**-0.0447*****	**-0.0408*****
	(0.0184)	**(0.0165)**	**(0.0091)**	**(0.0103)**	**(0.0120)**
q		0.0138**	0.0174***	0.0156***	0.0154***
		(0.0048)	(0.0029)	(0.0022)	(0.0021)
cfo		0.0270***	0.0024	-0.0001	-0.0001
		(0.0053)	(0.0035)	(0.0024)	(0.0024)
size				-0.0738***	-0.0766***
				(0.0065)	(0.0067)
cash				0.0259***	0.0259***
				(0.0010)	(0.0010)
lev				0.0025	0.0026
				(0.0028)	(0.0028)
election					0.0109***
					(0.0037)
ret_topix					-0.0103
					(0.0071)
vol_topix					-1.0315**
					(0.3927)
doll_yen					0.0107
					(0.0183)
cpi					0.0009
					(0.0015)
gdp_growth					-0.2110
					(0.1659)
gdp_forecast					-0.0007
					(0.0010)
Observations	56,620	56,620	56,620	56,620	56,620
Firm FE	no	no	yes	yes	yes
clustered by	firm&year	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.002	0.022	0.385	0.477	0.478

Panel B: Several proxies for investment variable

This table presents Model (1) results, regressing corporate investment on the overall EPU index. The variable of interest is the overall EPU index (*epu*). The dependent variable is the change in property, plant, and equipment (*Δppe*) in column 1, capital expenditure (*capex*) in column 2, investment in tangible and intangible assets (*tan+int*) in column 3, and the sum of capital expenditure and R&D expenditure (*capex+rd*). We include firm-level control variables: Tobin's q (*q*), cash flow from operation (*cfo*), firm size (*size*), cash holding (*cash*), and leverage (*lev*). The model also controls for macro-level variables: House election period indicator (election), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), dollar-yen rate (*doll_yen*), consumer confidence index (*cpi*), GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). Firm-fixed effects are also controlled. Standard errors in parentheses are obtained by clustering at the firm-year level. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively, using a two-tailed test.

	Δppe	*capex*	*tan+int*	*capex+rd*
	(1)	(2)	(3)	(4)
epu	**-0.0053**	**-0.0314****	**-0.0408*****	**-0.0280****
	(0.0241)	**(0.0120)**	**(0.0120)**	**(0.0103)**
q	0.0138***	0.0103***	0.0154***	0.0135***
	(0.0024)	(0.0017)	(0.0021)	(0.0019)
cfo	-0.0019	0.0000	-0.0001	-0.0020
	(0.0019)	(0.0019)	(0.0024)	(0.0023)
size	-0.1330***	-0.0944***	-0.0766***	-0.1113***
	(0.0095)	(0.0069)	(0.0067)	(0.0071)
cash	0.0119***	0.0106***	0.0259***	0.0182***
	(0.0011)	(0.0011)	(0.0010)	(0.0011)
lev	0.0037	-0.0058**	0.0026	-0.0069**
	(0.0033)	(0.0026)	(0.0028)	(0.0027)
election	0.0155*	0.0087	0.0109***	0.0107***
	(0.0074)	(0.0052)	(0.0037)	(0.0037)
ret_topix	0.0163	0.0044	-0.0103	-0.0019
	(0.0173)	(0.0073)	(0.0071)	(0.0065)
vol_topix	-1.6537	-1.3969***	-1.0315**	-1.2027**
	(1.0261)	(0.3694)	(0.3927)	(0.4882)
doll_yen	-0.0316	0.0157	0.0107	0.0202
	(0.0390)	(0.0199)	(0.0183)	(0.0179)
cpi	0.0050	0.0017	0.0009	0.0013
	(0.0034)	(0.0015)	(0.0015)	(0.0015)
gdp_growth	-0.3424	-0.2226	-0.2110	-0.1153
	(0.2234)	(0.1885)	(0.1659)	(0.1643)
gdp_forecast	0.0005	0.0002	-0.0007	-0.0006
	(0.0013)	(0.0011)	(0.0010)	(0.0010)
Observations	56,620	56,620	56,620	56,620
FE	firm	firm	yes	firm
clustered by	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.396	0.435	0.478	0.642

Table 5. Economic policy uncertainty and corporate investment:
This table presents Model (1) results, regressing corporate investment on the overall EPU index. The variable of interest represents the quintile of the overall EPU index, where we set the first quintile group as the baseline. The dependent variable is the change in property, plant, and equipment (*Δppe*) in column 1, capital expenditure (*capex*) in column 2, investment in tangible and intangible assets (*tan+int*) in column 3, and the sum of capital expenditure and R&D expenditure (*capex+rd*). We include firm-level control variables: Tobin's q (*q*), cash flow from operation (*cfo*), firm size (*size*), cash holding (*cash*), and leverage (*lev*). The model also controls for macro-level variables: House election period indicator (election), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), dollar-yen rate (*doll_yen*), consumer confidence index (*cpi*), GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). Firm-fixed effects are also controlled. Standard errors in parentheses are obtained by clustering at the firm-year level. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively, using a two-tailed test.

	Δppe	*capex*	*tan+int*	*capex+rd*
	(1)	(2)	(3)	(4)
epu				
2nd quantile	**0.0073**	**-0.0090**	**-0.0061**	**-0.0087**
	(0.0129)	**(0.0061)**	**(0.0052)**	**(0.0069)**
3rd quantile	**0.0020**	**-0.0119***	**-0.0140***	**-0.0127****
	(0.0135)	**(0.0062)**	**(0.0067)**	**(0.0060)**
4th quantile	**-0.0042**	**-0.0183*****	**-0.0199*****	**-0.0197*****
	(0.0108)	**(0.0059)**	**(0.0062)**	**(0.0068)**
5th quantile	**-0.0065**	**-0.0187***	**-0.0183****	**-0.0206****
	(0.0164)	**(0.0095)**	**(0.0080)**	**(0.0096)**
q	0.0141***	0.0103***	0.0135***	0.0122***
	(0.0024)	(0.0017)	(0.0020)	(0.0025)
cfo	-0.0018	0.0000	-0.0020	-0.0017
	(0.0019)	(0.0019)	(0.0023)	(0.0035)
size	-0.1334***	-0.0944***	-0.1115***	-0.1397***
	(0.0097)	(0.0070)	(0.0071)	(0.0098)
cash	0.0119***	0.0106***	0.0181***	0.0221***
	(0.0011)	(0.0011)	(0.0011)	(0.0017)
lev	0.0037	-0.0058**	-0.0069**	-0.0069*
	(0.0033)	(0.0026)	(0.0027)	(0.0035)
election	0.0176**	0.0075	0.0102**	0.0081
	(0.0069)	(0.0052)	(0.0042)	(0.0067)
ret_topix	0.0114	0.0051	-0.0093	-0.0002
	(0.0165)	(0.0086)	(0.0080)	(0.0079)
vol_topix	-1.6082*	-1.5681***	-1.3286***	-2.1746***
	(0.8965)	(0.4507)	(0.4119)	(0.5408)
doll_yen	-0.0420	0.0171	0.0160	0.0160
	(0.0331)	(0.0206)	(0.0149)	(0.0227)
cpi	0.0045	0.0018	0.0015	0.0022
	(0.0036)	(0.0017)	(0.0016)	(0.0021)
gdp_growth	-0.3375	-0.2315	-0.1036	-0.0304
	(0.2143)	(0.1853)	(0.1599)	(0.2511)
gdp_forecast	0.0007	0.0003	-0.0011	-0.0007
	(0.0014)	(0.0011)	(0.0009)	(0.0016)
Observations	56,620	56,620	56,620	56,620
FE	firm	firm	firm	firm
clustered by	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.396	0.435	0.497	0.642

Table 6. Categorical EPU and corporate investment:
This table presents Model (1) results, which regresses corporate investment on categorical EPU. The dependent variable is investment in tangible and intangible assets (*tan+int*). The variables of interest are the fiscal policy EPU index in column 1, the monetary policy EPU index in column 2, the trade policy EPU index in column 3, and the currency policy EPU index in column 4. We include firm-level control variables: Tobin's q (*q*), cash flow from operation (*cfo*), firm size (*size*), cash holding (*cash*), and leverage (*lev*). The model also controls for macro-level variables: House election period indicator (*election*), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), dollar-yen rate (doll_yen), consumer confidence index (*cpi*), GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). Firm-fixed effects are also controlled. Standard errors in parentheses are obtained by clustering at the firm-year level. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively, using a two-tailed test.

	tan+int			
	(1)	(2)	(3)	(4)
epu_fp	**-0.0313***** **(0.0069)**			
epu_mp		**-0.0107** **(0.0084)**		
epu_tp			**0.0035** **(0.0034)**	
epu_cp				**-0.0285***** **(0.0078)**
q	0.0133***	0.0137***	0.0138***	0.0136***
	(0.0019)	(0.0019)	(0.0019)	(0.0019)
cfo	-0.0021	-0.0020	-0.0021	-0.0021
	(0.0023)	(0.0023)	(0.0023)	(0.0023)
size	-0.1122***	-0.1114***	-0.1121***	-0.1125***
	(0.0070)	(0.0071)	(0.0071)	(0.0071)
cash	0.0181***	0.0181***	0.0180***	0.0180***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)
lev	-0.0068**	-0.0069**	-0.0068**	-0.0068**
	(0.0027)	(0.0027)	(0.0027)	(0.0027)
election	0.0112***	0.0100**	0.0085**	0.0117***
	(0.0039)	(0.0035)	(0.0033)	(0.0037)
ret_topix	-0.0083	-0.0037	0.0034	-0.0036
	(0.0050)	(0.0085)	(0.0091)	(0.0073)
vol_topix	-1.0579**	-1.6423***	-1.4798**	-2.0446***
	(0.3896)	(0.4839)	(0.6841)	(0.5321)
doll_yen	0.0007	0.0364*	0.0530**	0.0052
	(0.0152)	(0.0184)	(0.0201)	(0.0184)
cpi	0.0014	0.0005	-0.0006	0.0007
	(0.0013)	(0.0015)	(0.0014)	(0.0013)
gdp_growth	-0.0377	-0.1064	-0.0564	-0.0334
	(0.1575)	(0.1652)	(0.1655)	(0.1594)
gdp_forecast	-0.0011	-0.0011	-0.0013	-0.0012
	(0.0009)	(0.0010)	(0.0010)	(0.0009)
Observations	56,620	56,620	56,620	56,620
FE	firm	firm	firm	firm
clustered by	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.497	0.497	0.497	0.497

Table 7. EPU and precautionary cash holding:

This table presents Models (2) and (3) results, examining the effects of EPU on corporate cash holdings.

The dependent variable is the change in cash holdings. The variable in interest in columns 1-5 is EPU indices (*epu_index*) to capture the effects of EPU indices on corporate cash holdings. The variable of interest in columns 6-10 is the interaction term between operating cash flow and EPU indices (*epu_index*×*cfo*), which captures cash holding sensitivity to the change in internal capital. We include firm-level control variables: Tobin's q (*q*), cash flow from operation (*cfo*), firm size (*size*), lagged investment (*lag*(*tan*+*int*)), and leverage (*lev*). The model also controls for macro-level variables: House election period indicator (*election*), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), dollar-yen rate (*doll_yen*), consumer confidence index (*cpi*), GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). Firm-fixed effects are also controlled. Standard errors in parentheses are obtained by clustering at the firm-year level. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively, using a two-tailed test.

	Δcash					*Δcash*				
	epu (1)	*epu_fp* (2)	*epu_mp* (3)	*epu_tp* (4)	*epu_ep* (5)	*epu* (6)	*epu_fp* (7)	*epu_mp* (8)	*epu_tp* (9)	*epu_ep* (10)
epu	**0.1515****	**0.1124***	**0.0977***	**0.0703*****	**0.0784**					
	(0.0690)	**(0.0559)**	**(0.0491)**	**(0.0213)**	**(0.0594)**					
epu* × *cfo						**0.2836*****	**0.2004*****	**0.1908*****	**0.1243*****	**0.1479****
						(0.0550)	**(0.0452)**	**(0.0507)**	**(0.0253)**	**(0.0616)**
q	0.0331**	0.0335**	0.0321**	0.0314**	0.0313**	0.0342***	0.0355***	0.0342***	0.0314***	0.0361***
	(0.0114)	(0.0116)	(0.0112)	(0.0114)	(0.0114)	(0.0104)	(0.0105)	(0.0106)	(0.0103)	(0.0109)
cfo	0.4129***	0.4130***	0.4128***	0.4127***	0.4130***	-0.8915***	-0.4996**	-0.4754*	-0.1565	-0.2523
	(0.0330)	(0.0330)	(0.0330)	(0.0329)	(0.0329)	(0.2540)	(0.2110)	(0.2355)	(0.1270)	(0.2797)
size	-0.2500***	-0.2488***	-0.2512***	-0.2542***	-0.2485***	-0.2501***	-0.2486***	-0.2507***	-0.2546***	-0.2482***
	(0.0394)	(0.0393)	(0.0395)	(0.0395)	(0.0389)	(0.0391)	(0.0391)	(0.0391)	(0.0388)	(0.0392)
lev	-0.0272	-0.0273	-0.0272	-0.0270	-0.0274	-0.0291	-0.0286	-0.0284	-0.0254	-0.0276
	(0.0195)	(0.0194)	(0.0194)	(0.0195)	(0.0194)	(0.0186)	(0.0185)	(0.0192)	(0.0177)	(0.0189)
lag(tan+int)	0.0016	0.0017	0.0010	0.0020	-0.0004	0.0011	0.0021	0.0005	0.0043	0.0019
	(0.0530)	(0.0532)	(0.0527)	(0.0524)	(0.0526)	(0.0534)	(0.0532)	(0.0534)	(0.0523)	(0.0530)
election	0.0205	0.0181	0.0105	0.0058	0.0132	-0.0130	-0.0108	-0.0151	-0.0145	-0.0090
	(0.0645)	(0.0647)	(0.0681)	(0.0649)	(0.0677)	(0.0645)	(0.0641)	(0.0641)	(0.0625)	(0.0641)
ret_topix	0.0567	0.0598	0.0642	0.0183	0.0658	0.0020	0.0020	0.0046	-0.0031	0.0134
	(0.0452)	(0.0432)	(0.0504)	(0.0430)	(0.0496)	(0.1163)	(0.1163)	(0.1164)	(0.1133)	(0.1156)
vol_topix	-5.4762*	-4.2098	-4.9434	-2.1004	-1.4500	0.2213	0.6238	-0.9164	0.7548	1.4875
	(3.1280)	(3.2345)	(3.1358)	(2.9590)	(3.6784)	(6.2265)	(6.1669)	(6.4495)	(6.2367)	(6.1458)
doll_yen	0.1029	0.0940	0.0289	0.0648	0.0479	0.5192	0.5212	0.5000	0.4965	0.5516
	(0.0965)	(0.1006)	(0.0814)	(0.0739)	(0.0801)	(0.4158)	(0.4163)	(0.4133)	(0.3885)	(0.4134)
cpi	0.0037	0.0094	0.0080	-0.0038	0.0115	-0.0645*	-0.0633*	-0.0623*	-0.0661*	-0.0702*
	(0.0088)	(0.0088)	(0.0083)	(0.0078)	(0.0097)	(0.0363)	(0.0362)	(0.0355)	(0.0332)	(0.0348)

gdp_growth	-1.2103	-1.3432*	-1.0768	-0.7389	-1.2886	-0.4430	-0.4191	-0.4661	-0.5285	-0.4518
	(0.7487)	(0.7597)	(0.7349)	(0.6791)	(0.7412)	(0.6923)	(0.6984)	(0.6790)	(0.6574)	(0.6787)
gdp_forecast	0.0162**	0.0153**	0.0175***	0.0135**	0.0167***	0.0047	0.0045	0.0060	0.0061	0.0058
	(0.0057)	(0.0063)	(0.0051)	(0.0052)	(0.0057)	(0.0067)	(0.0068)	(0.0064)	(0.0063)	(0.0066)
Observations	53,723	53,723	53,723	53,723	53,723	53,723	53,723	53,723	53,723	53,723
Firm	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year	no	no	no	no	no	yes	yes	yes	yes	yes
clustered by	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.259	0.259	0.259	0.260	0.259	0.266	0.265	0.265	0.266	0.263

Table 8. U.S. EPU and investment

This table presents the results of analyses using U.S. EPU. The dependent variable is investment in tangible and intangible assets (*tan+int*). Column 1 shows the result of the model where the variable in interest is U.S. EPU (*us_epu*). In Columns 2-5, the main independent variable is the orthogonal part of Japanese EPU to corresponding categorical U.S. EPU. We calculate the part of all categorical EPU. We include firm-level control variables: Tobin's q (*q*), cash flow from operation (*cfo*), firm size (*size*), cash holding (*cash*), and leverage (*lev*). The model also controls for macro-level variables: House election period indicator (*election*), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), dollar-yen rate (*doll_yen*), consumer confidence index (*cpi*), GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). Firm-fixed effects are also controlled. Standard errors in parentheses are obtained by clustering at the firm-year level. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively, using a two-tailed test.

	US EPU	Residual			
	tan+int	*overall*	*fiscal*	*monetary*	*trade*
	(1)	(2)	(3)	(4)	(5)
us_epu	**-0.0212****				
	(0.0086)				
resudual_epu		**-0.0214**	**-0.0313*****	**-0.0105**	**0.0015**
		(0.0205)	**(0.0107)**	**(0.0099)**	**(0.0043)**
Q	0.0134***	0.0158***	0.0155***	0.0158***	0.0158***
	(0.0020)	(0.0021)	(0.0021)	(0.0021)	(0.0022)
Cfo	-0.0020	-0.0001	-0.0001	-0.0001	-0.0001
	(0.0023)	(0.0024)	(0.0024)	(0.0024)	(0.0024)
Size	-0.1111***	-0.0767***	-0.0783***	-0.0758***	-0.0768***
	(0.0072)	(0.0068)	(0.0068)	(0.0069)	(0.0069)
Cash	0.0182***	0.0259***	0.0258***	0.0259***	0.0258***
	(0.0011)	(0.0010)	(0.0010)	(0.0010)	(0.0010)
Lev	-0.0069**	0.0027	0.0028	0.0026	0.0027
	(0.0027)	(0.0028)	(0.0028)	(0.0028)	(0.0028)
Election	0.0122***	0.0090**	0.0098**	0.0094**	0.0090**
	(0.0035)	(0.0033)	(0.0037)	(0.0034)	(0.0037)
ret_topix	-0.0067	-0.0009	-0.0042	-0.0029	0.0019
	(0.0072)	(0.0095)	(0.0077)	(0.0100)	(0.0099)
vol_topix	-1.7211***	-1.3012*	-1.0461**	-1.7391***	-1.6481**
	(0.5029)	(0.6640)	(0.4451)	(0.5668)	(0.6742)
doll_yen	0.0226	0.0424*	0.0235	0.0445**	0.0563**
	(0.0180)	(0.0235)	(0.0191)	(0.0204)	(0.0212)
cpi	0.0017	-0.0009	-0.0002	-0.0010	-0.0016
	(0.0018)	(0.0017)	(0.0014)	(0.0016)	(0.0016)
gdp_growth	-0.1397	-0.1867	-0.1360	-0.2366	-0.1878
	(0.1688)	(0.1759)	(0.1765)	(0.1660)	(0.1671)
gdp_forecast	-0.0007	-0.0008	-0.0009	-0.0006	-0.0007
	(0.0010)	(0.0011)	(0.0010)	(0.0010)	(0.0011)
Observations	56,620	56,620	56,620	56,620	56,620
Firm	yes	yes	yes	yes	yes
clustered by	firm&year	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.497	0.478	0.478	0.478	0.478

Table 9. Robustness tests:

This table presents Model (1) results, with additional control variables and semi-annual financial data. Columns 1-5 report the model results with additional variables VXJ (*vxj*) and year fixed effects. Columns 6-10 show the estimation results using the semi-annual financial data.

The dependent variable is investment in tangible and intangible assets (*tan+int*). The variable of interest is the overall EPU index (*epu*) in columns 1 and 6, fiscal policy EPU index (*epu_fp*) in columns 2 and 7, monetary policy EPU index (*epu_mp*) in columns 3 and 8, EPU index (*epu_tp*) in columns 4 and 9, and currency policy EPU index (*epu_cp*). We include firm-level control variables: Tobin's q (*q*), cash flow from operation (*cfo*), firm size (*size*), cash holding (*cash*), and leverage (*lev*). The model also controls for macro-level variables: House election period indicator (*election*), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), dollar-yen rate (*doll_yen*), consumer confidence index (*cpi*), GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). Firm-fixed effects are also controlled. Quarter-and-fiscal period fixed effects (*quarter* and *period*, respectively) are included to mitigate seasonal effects. Standard errors in parentheses are obtained by clustering at the firm-year level. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively, using a two-tailed test.

	tan+int									
	year FE+fc+vxj					semi-annual				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
epu	**-0.0539***					**-0.0142*****				
	(0.0285)					**(0.0038)**				
epu_fp		**-0.0492****					**-0.0142*****			
		(0.0220)					**(0.0031)**			
epu_mp			**-0.0251**					**-0.0015**		
			(0.0177)					**(0.0031)**		
epu_tp				**-0.0033**					**-0.0007**	
				(0.0105)					**(0.0025)**	
epu_cp					**-0.0282**					**-0.0081***
					(0.0209)					**(0.0045)**
fc	0.0071	0.0038	0.0077	0.0002	-0.0004					
	(0.0107)	(0.0099)	(0.0126)	(0.0101)	(0.0095)					
vxj	0.0248	0.0284	0.0221	0.0046	0.0053					
	(0.0202)	(0.0172)	(0.0201)	(0.0191)	(0.0189)					
q	0.0130***	0.0130***	0.0131***	0.0130***	0.0130***	0.0055***	0.0054***	0.0058***	0.0058***	0.0057***
	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0009)	(0.0009)	(0.0009)	(0.0009)	(0.0009)
cfo	-0.0021	-0.0021	-0.0021	-0.0021	-0.0021	0.0008	0.0008	0.0007	0.0007	0.0007
	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0012)
size	-0.1132***	-0.1132***	-0.1132***	-0.1132***	-0.1133***	-0.0478***	-0.0480***	-0.0478***	-0.0478***	-0.0479***
	(0.0071)	(0.0071)	(0.0071)	(0.0071)	(0.0071)	(0.0024)	(0.0024)	(0.0025)	(0.0025)	(0.0025)
cash	0.0180***	0.0180***	0.0180***	0.0180***	0.0180***	0.0057***	0.0057***	0.0057***	0.0057***	0.0057***
	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
lev	-0.0067**	-0.0067**	-0.0067**	-0.0067**	-0.0067**	-0.0016*	-0.0016*	-0.0016*	-0.0016*	-0.0016*
	(0.0027)	(0.0027)	(0.0027)	(0.0027)	(0.0027)	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
election	0.0125**	0.0140**	0.0081	0.0083	0.0061	-0.0009	-0.0002	-0.0028	-0.0028	-0.0030
	(0.0055)	(0.0055)	(0.0051)	(0.0049)	(0.0050)	(0.0023)	(0.0021)	(0.0026)	(0.0027)	(0.0024)
ret_topix	-0.0030	-0.0051	-0.0033	0.0072	0.0064	0.0028	0.0011	0.0051	0.0061	0.0015

	(0.0107)	(0.0118)	(0.0130)	(0.0123)	(0.0118)	(0.0070)	(0.0064)	(0.0076)	(0.0076)	(0.0080)
vol_topix	-1.0587	-1.4961	-1.7637*	-0.9659	-0.8582	0.3553	0.4988*	-0.1380	-0.1828	-0.0683
	(0.9057)	(0.9156)	(0.9859)	(0.9810)	(0.8500)	(0.2874)	(0.2543)	(0.3212)	(0.2969)	(0.2539)
doll_yen	0.0627	0.0489	0.0876*	0.0830	0.0478	0.0040	-0.0011	0.0180	0.0172	0.0101
	(0.0411)	(0.0387)	(0.0498)	(0.0511)	(0.0514)	(0.0095)	(0.0084)	(0.0119)	(0.0131)	(0.0117)
cpi	-0.0050	-0.0049	-0.0071	-0.0041	-0.0033	0.2267***	0.1810***	0.1633**	0.1825*	0.1486**
	(0.0039)	(0.0038)	(0.0050)	(0.0049)	(0.0041)	(0.0683)	(0.0588)	(0.0783)	(0.1036)	(0.0720)
gdp_growth	0.0407	0.0405	0.0305	0.0282	0.0239	0.2800	0.2590	0.3117*	0.3112*	0.3218*
	(0.1682)	(0.1692)	(0.1686)	(0.1669)	(0.1676)	(0.1883)	(0.1919)	(0.1641)	(0.1634)	(0.1726)
gdp_forecast	-0.0012	-0.0009	-0.0011	-0.0011	-0.0012	-0.0015	-0.0012	-0.0019**	-0.0019**	-0.0018*
	(0.0012)	(0.0012)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0011)	(0.0009)	(0.0009)	(0.0009)
Observations	56,620	56,620	56,620	56,620	56,620	115,598	115,598	115,598	115,598	115,598
FE	firm+year	firm+year	firm+year	firm+year	firm+year	firm +quarter +period	firm +quarter +period	firm +quarter +period	firm +quarter +period	firm +quarter +period
clustered by	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.498	0.498	0.498	0.498	0.498	0.402	0.402	0.402	0.402	0.402

Table 10. Robustness on the alternative EPU windows

This table presents the results of the regression model, where EPU indices take different lags: one quarter (three months) lagged, one half-year (six months) lagged, and one year (12 months) lagged. We include firm-level control variables: Tobin's q (*q*), cash flow from operation (*cfo*), firm size (*size*), cash holding (*cash*), and leverage (*lev*). The model also controls for macro-level variables: House election period indicator (*election*), TOPIX return (*ret_topix*), TOPIX return volatility (*vol_topix*), dollar-yen rate (*doll_yen*), consumer confidence index (*cpi*), GDP growth (*gdp_growth*), and OECD GDP forecast (*gdp_forecast*). Firm-fixed effects are also controlled. Quarter-and-fiscal period fixed effects (*quarter* and *period*, respectively) are included to mitigate seasonal effects. Standard errors in parentheses are obtained by clustering at the firm-year level. *, **, *** indicate significance at the 10%, 5%, and 1% levels, respectively, using a two-tailed test.

	epu			***epu_fp***			***epu_mp***		
	One Quarter	One Half-Year	One Year	One Quarter	One Half-Year	One Year	One Quarter	One Half-Year	One Year
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
epu index	**-0.0341****	**-0.0408*****	**-0.0354*****	**-0.0331*****	**-0.0313*****	**-0.0256*****	**-0.0077**	**-0.0107**	**-0.0100**
	(0.0135)	**(0.0120)**	**(0.0103)**	**(0.0072)**	**(0.0069)**	**(0.0065)**	**(0.0079)**	**(0.0084)**	**(0.0076)**
control	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	56,620	56,620	56,620	56,620	56,620	56,620	56,620	56,620	56,620
FE	firm	firm	firm	firm	firm	firm	firm	firm	firm
clustered by	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.497	0.497	0.497	0.497	0.497	0.497	0.497	0.497	0.497

	epu_tp			***epu_cp***		
	One Quarter	One Half-Year	One Year	One Quarter	One Half-Year	One Year
	(10)	(11)	(12)	(13)	(14)	(15)
epu index	**0.0025**	**0.0035**	**0.0018**	**-0.0261*****	**-0.0285*****	**-0.0137**
	(0.0041)	**(0.0034)**	**(0.0034)**	**(0.0064)**	**(0.0078)**	**(0.0100)**
control	yes	yes	yes	yes	yes	yes
Observations	56,620	56,620	56,620	56,620	56,620	56,620
FE	firm	firm	firm	firm	firm	firm
clustered by	firm&year	firm&year	firm&year	firm&year	firm&year	firm&year
Adj. R^2	0.497	0.497	0.497	0.497	0.497	0.497