Does Policy Uncertainty Affect Exchange Rate Exposure? Evidence from Chinese Firms[1]

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Abstract:

Using a large database of 3616 listed firms from China, we find a strong positive relationship between policy uncertainty and firms' exchange rate exposure. This result remains robust after controlling macroeconomic conditions and addressing endogeneity issues. Most importantly, we find evidence that the impact of policy uncertainty is significantly stronger for firms with a higher degree of international involvements and for firms that are poorly governed. Interestingly, firms use financial hedging more intensively, but reduce their operational hedging in response to an increase in uncertainty. Our results suggest that policy uncertainty exacerbate the impacts of currency movements on firms' financial performance, as firms are increasingly involved in international operation. To cope with this, a firm needs to strengthen its corporate governance and make effective use of hedging tools.

Key words: Economic Policy Uncertainty (EPU), International operation, Corporate governance, Hedging.

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1. Introduction

Exchange rate risk is recognized as one of the most important dimensions of corporate daily operation (Bodnar et al., 2002; Bartram et al., 2010). Indeed, exchange rate movements could significantly impact firm performance because of firms' international operation, oversea investments and market competition (Brown, 2001; Aggarwal and Harper, 2010; He et al., 2021b). Given the magnitude of the influence of exchange rate exposure, prior literature has devoted considerable efforts on the scale, as well as sources of this exposure[2]. In this paper, we contribute to the ongoing discussion by showing another important factor affecting variation in firms' exchange rate exposure: uncertainty surrounding government economic policies.

A large number of studies have shown that government policies have a wide range of impacts on firms' operation environments. Firms face substantial uncertainties regarding regulations, taxation, and market competitions, which exert significant impacts on corporate decisions (Bhattacharya et al., 2017; Altig et al., 2020; Guceri and Albinowski, 2021). In the context of exchange rate exposure, policy uncertainty could be an important source of risks because it could lead to increased uncertainty on firm's international operations or its abilities of hedging exchange rate risks. Recent studies have provided evidence that firms use hedging tools more intensively in a response to an increase in policy uncertainty (Nguyen et al., 2018) and policy uncertainty deter cross-border acquisitions (Cao et al., 2019).

Using the data from 2010 to 2020 of all Chinese listed firms and economic policy uncertainty index (EPU) developed Baker et al. (2016), we empirically examine the relationship between policy uncertainty and exchange rate exposure. The choice of country is dictated as the weak evidence of previous studies on the exchange rate exposure in US corporations[3], the rising of Chinese economy in the world economy,

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[2] Pioneered by Dufey (1972), the exchange rate exposure literature has been advanced in both quantitative and qualitative dimensions by Shapiro (1975), Dumas (1978), Hodder (1982), Adler and Dumas (1984), Jorion (1990), He and Ng (1998), Bodnar et al. (2002), more recently, Bartram (2019), Entrop and Fuchs (2019), He et al. (2021a, 2021b), Salomao and Verela (2022).

[3] For instance, Jorion (1990) show only 15/287 US multinationals show significant exposure at 5% level. See Bartram and Bodnar (2007) for a detailed discussion of the empirical results of exchange rate exposure.

and many Chinese firms intensively involved in global market that are more sensitive to the exchange rate risks (He et al. 2021a). Thus, Chinese data is more likely to reduce the estimation noise as Chinese firms are more sensitive to the unexpected exchange rate movements (He et al., 2021b). More importantly, China provides an important setting to investigate the impact of policy uncertainty on exchange rate exposure. During our sample period, Chinese implemented a series of market-oriented reform, leading to a great uncertainty in economic policy. For instance, as the second-largest Chinese telecom-equipment maker and technology and product solutions provider in more than 160 countries and regions, ZTE became a representative victim of substantial trade policy uncertainty triggered by Sino-US trade conflicts in 2018 and 2019, with supply chains disrupted and stagnation in production and sales. It shows that uncertainty on China's trade policies, not only on its implementation, but also on its impact on firms engaging in international market. Finally, there are few researches on hedging behavior among Chinese firms, even though they have actively participated in derivatives transactions.

We begin our analysis by examining the effect of policy uncertainty on aggregate exchange rate exposure, measured by the average exposure of all Chinese listed firms. Specifically, we conduct a Vector autoregression (VAR) analysis with aggregate exchange rate exposure, the economic policy uncertainty index (EPU thereafter), and other macro-economic controls. Our results suggest that one standard deviation increase in EPU is associated with 3.366% increase in aggregate exchange rate exposure, accounting for 12.751% of the sample mean (sample mean is 0.264).

Next, we estimate the impacts of policy uncertainty on firm-level exchange rate exposure. Specially, we model the extent of firm's exposure in quarter t as a function of policy uncertainty as well as a set of firm-level controls in year t-1. The empirical evidence indicates that EPU produces positive and statistically significant effect on firm-level exchange rate exposure. One standard deviation increase in EPU is associated with 0.022 (0.028×0.785) increase in the exchange rate exposure. In addition, we find that operational hedging ameliorates the impact of policy uncertainty on exposure, while there is no such evidence for financial hedging. Our results suggest that

firms' financial hedging is inadequate in emerging market economies, like China, and operational hedges can provide better protection than financial hedging during times of high policy uncertainty.

Similar results are obtained using alternative measures for policy uncertainty and exchange rate exposure, different specifications and including a host of macro-economic controls. To examine whether impacts of EPU depends on the certain policies generating this uncertainty, we employ several specific policy uncertainty indices by Huang and Luk (2020), e.g. fiscal policy, monetary policy, and trade policy. The results show that fiscal policy uncertainty and trade policy uncertainty have stronger effect in driving firms' exchange rate exposure.

So far, our findings suggest a positive relationship between exchange rate exposure and policy uncertainty. Our studies do not rule out the possibility of omitted variable bias, such as economic uncertainty as an explanation. To address endogeneity concerns, we search for instrumental variables to guard the potential endogeneity problems. Specifically, we use the number of geological disasters as instrumental variable for EPU. With more attention toward political and social stability by Communist Party of China, policy makers in China, both central and local government, are unlikely to address new series of policies, especially major policies that may cause huge influence on Chinese society and market, leading to downward EPU. The pronounced positive relationship between firms' exposure and EPU survives.

To uncover the channels through which policy uncertainty affects exchange rate exposure, we investigate three distinct (but not mutually exclusive) possibilities. First and most straightforward, international operation. Economic policy uncertainty exacerbates cash flow fluctuation at firm level, especially for those with high oversea revenue. Compared to purely domestic firms, international firms are more sensitive to more kinds of policies and bear uncertainty risk from both domestic and international channels. For such firms, increase in EPU should increase uncertainty about the firms' international prospects, which should translate into higher exchange rate exposure. Second, higher uncertainty could increase the number of deals motivated by insiders' self-interests. Duchin and Schmidt (2013) find that an increase in EPU makes it easier

for managers in poorly governed firms engage in self-serving deals without immediate consequence. If policy uncertainty significantly increases insiders' rent seeking activities, leading to a large cash flow volatility, we expect high EPU periods to be associated with high exchange rate exposure. Finally, a number of studies show that firms actively adopt risk management tools to manage currency risk. For instance, Bodnar et al. (2011) took a survey and found that macro conditions (such as current account or federal budget surplus/deficit) may affect the willingness to hedge foreign exchange risk. If high uncertainty increases the use of both financial and operational hedging, we should observe a muted positive or negative relationship between policy uncertainty and exchange rate exposure.

In order to test whether exchange rate exposure of international firms is more susceptible to EPU, compared with purely domestic firms, we investigate the impact of oversea revenue, international competition and foreign currency loan on the nexus of EPU and exchange rate exposure, respectively. As expected, international operation brings about a closer connection between EPU and exchange rate exposure.

To test whether policy uncertainty induce corporate insiders to seek private benefits, we start by investigating whether there are more self-serving transactions during high policy uncertainty periods. We compare harmful related party transactions, other receivables proportion, executive compensation proportion between high and low policy uncertainty periods and find that the insiders' rent seeking activities run wild relatively during high policy uncertainty period, both in terms of mean and median. Note that better corporate governance can constraint insiders' self-serving transactions (He and Rui, 2016). We thus investigate whether the positive impact of policy uncertainty is moderated by better governance or corporate transparency. We find that both internal and external governance help the enterprises to relieve the pressure from economic policy uncertainty, and reduce the response of exchange rate exposure to EPU.

If policy uncertainty encourages firms to conduct risk managements more intensively, we should observe a positive relationship between policy uncertainty and financial hedging and operational hedges. Interestingly, we find that firms increase their use of financial derivatives, while reduce their multinational activity. One standard

deviation increase in EPU is associated with about 62.870% ($0.758\times(e^{0.604}-1)$) increase in likelihood of using financial derivatives, while the coefficient of EPU on operational hedging is negative with a certain significance. One standard deviation increase in EPU is associated with about 8.308% ($0.758\times(e^{0.104}-1)$) decrease in likelihood of adopting operational hedging. Given the inadequate role of financial hedging against exposure in China, our findings support the notion that policy uncertainty can depress corporate oversea investments, and hence minimize the role of operational hedging against exchange rate risks.

Our results have valuable and practical policy implications both for firm managers on decisions related to exchange rate risks management and for policy makers on awareness of fundamental effects of uncertainty released by policies announcements. Overall, considering that China is a typical case of country who has been plagued by economic policy uncertainty overtime, we use Chinese firm-level data to provide particular striking evidence that policy uncertainty makes a firm's value more sensitive to exchange rate fluctuations. By lending support to another major influence of economic policy uncertainty on firms, this paper calls for attention to maintain the consistency and continuity of policies, especially in emerging market countries and countries with high level of international dependence. While periods of stability offer private sector an important opportunity to manage risks successfully and operate smoothly, policy stimuli adopted in downturns, such as during the COVID-19 pandemic, may not be as effective as expected with overwhelming uncertainty in the market.

Moreover, our analysis also confirms that the promoting effect of EPU on exchange rate exposure is inextricably related to the risk management, international operation and rent seeking. Better corporate governance and efficient risk management should be pursued, especially for international firms who are vulnerable to exchange rate volatility and EPU and especially in high EPU periods which provide an invisible cover for insiders' self-dealing transactions. However, it should be noted that the foreign exchange derivatives market in China is not mature and far from developed yet, with only a small percentage of firms engaged in hedging activities against exchange rate volatility actually. Reducing the cost of the hedging instrument usage is another

important target for financial reforms in China.

The remainder of the paper is organized as follows: Section 2 reviews the previous literature on determinants of exchange rate exposure and the potential corporate impact brought by policy uncertainty. Section 3 describes our data and variables, and provides some statistics. Our empirical results exhibit in Section 4, including main results, different measures of policy uncertainty, the effect of hedging and heightened exchange rate volatility. A vast of robustness tests are listed in Section 5, endogeneity concerns are also addressed in this section. In Section 6, we test three possible channels that may affect the relationship between EPU and exposure: international operation, corporate governance, and risk management. Section 7 draws the main conclusions of our study.

2. Literature and relative contribution

Our studies make a contribution to two broad strands of literature: the determination in the variation of exchange rate exposure and the impacts of policy uncertainty on corporate operation.

2.1. Determinants of exchange rate exposure

It is important to understand the sources of variation in exchange rate exposure. Foreign exchange rate exposures have increasingly been recorded, along with the volatility of exchange rate market that may result from the growingly intertwined economic linkages among countries. The expansion of multinational corporations accompanied by subtly finer division of industry chain further pressures exchange rate market with the unprecedented volume of foreign currency denominated transactions. Considering exchange rate movements are unpredictable, Hekman (1985) model a firm's exposure as its present value of future after-tax operating cash flows and financial hedging activities. Further, Hodder (1982) notice that even a national firm involved with no foreign income or sales may also need to adjust its operative activity to indirectly tackle possible foreign exchange rate risks faced by its competitors in the industry. Over the past 40 years, scholars have accordingly conducted numerous researches regarding the impact of foreign exchange rate risk on firm's market value.

Adler and Dumas (1984), among the first, theoretically define foreign exchange

rate exposure and bring it to the data of public firms. The line of literature was ever since lengthened by the discussion about determinants of exchange rate exposure. First, exchange rate exposure is related to business operation. Enterprises with a large amount of international activities, such as oversea revenues and foreign trade partner, are more susceptible to exchange rate fluctuations (He and Ng, 1998; Dominguez and Tesar, 2006; Hutson and Laing, 2014). Exchange rate changes, resulting in increased short-term cash flow volatility, make firms more likely to give up investment opportunities with positive NPV which Froot et al. (1993) concluded it as underinvestment problem. Due to more serious underinvestment problem, companies with high leverage ratio or good growth opportunity are more vulnerable to currency-related risk. Liquidity, on the one hand, is associated with underinvestment problem, more importantly, reduces the likelihood of financial distress, thereby mitigating the cash flow fluctuations to exchange rate changes (Nance et al., 1993; Hustson and Stevenson, 2010; Wei and Starks, 2013). Second, willingness to hedge and hedge cost affect the degree of exchange rate exposure. Both operational hedging and financial hedging can reduce exchange rate exposure, so the motivation of firms to engage in hedging behavior is an integral explanatory factor. For instance, Nance et al. (1993) claim that there are economies of scale in the area of hedging cost. Lower hedging cost and greater hedging benefits give large enterprises more incentive to conduct hedging activities, resulting in lower exchange rate exposure. Besides, that available to hedging tool is also important. Wei and Stark (2013) argue that it's more difficult for companies in financial distress to enter the financial market to manage exchange rate exposure through various foreign exchange derivatives, inevitably amplifying the effect of exchange rate fluctuation. This hypothesis is particularly crucial in analyzing emerging market countries for its lack of hedging tools. He et al. (2021b) conclude proxies for firm's hedging cost generate significant effect on exposure. Additionally, some researches discuss from the perspective of macro factors, but also in line with the business operation and hedging activities. Chaieb and Mazzotta (2013) demonstrated that macroeconomic changes drive the dynamics of exchange rate exposure both multinational and national. Exchange rate movements create the stress to national inflation and monetary policy,

and even become a flashpoint to financial crisis. Economic exposure channels make every national firm bare to the exchange risk. Macro-conditions also affect firms' hedging capacity. Stable macroeconomic and limited financial liberalization makes a firm more difficulty in hedging risk through pricing (Devereux and Yetman, 2010; Campa and Minguez, 2006), and turbulent environment also add cost to the financial derivatives (Ehlers and Packer, 2013).

We contribute to this ongoing discussion by showing an important source of variation in exchange rate exposure: policy uncertainty. A budding literature asserts that policy uncertainty impacts the global economy (Julio and Yook, 2016; Choi et al., 2021). In the context of exchange rate exposure, policy uncertainty could lead to increased uncertainty in both cash flow volatility and operation environment. Our results suggest that policy uncertainty is a potential missing factor accounting exchange rate exposure.

2.2 Policy uncertainty and corporate impacts

Corporate decisions are closely related to policy uncertainty for it may change macro environment, industrial competition and corporate profitability. Theoretically, the increasing uncertainty associated with positive or negative corporate investment are demonstrated by Abel (1983) and Bernanke (1983), respectively. However, reduced form regression results mostly provide support to the later one, uncertainty will decrease corporate investment (Bloom, 2009; Julio and Yook, 2012; Bonaime et al., 2018). The mechanism in Bernanke's model based on the assumption that investment is irreversible, so uncertainty increase the value of a call option accompanying with the project investment to compensate the benefit of waiting, more information of the project. In his story, firms postpone to make decisions by themselves in order to get more detailed information and exact assessment of the project, but some studies argue that firms have to cut down on investment because of increasing cost of external financing, both bank lending and open market financing, caused by uncertainty (Christiano et al., 2014; Gilchrist et al., 2014; Arellano et al., 2019). Specifically, Gulen and Ion (2016) investigate how much investment decline is contributed by policy uncertainty, and find policy-related uncertainty explain almost two thirds of the corporate investment drop during 2007-09. Besides corporate investment, policy uncertainty also has impacts on

corporate cash holding (Han and Qiu, 2007), dividend policy (Farooq and Ahmed, 2019), bank lending (Francis et al., 2014), M&A decisions (Bonaime et al., 2018), IPO decisions (Çolak et al., 2017), credit spreads (Kaviani et al., 2020) and corporate innovation (Bhattacharya et al., 2017).

Policy uncertainty directly conduct significant effects on corporate activities, not only corporate operation, but also corporate governance. Indeed, Baker et al. (2016) define policy uncertainty as "who will make economic policy decisions, what economic policy actions will be undertaken and when, and the economic effects of policy actions". Take some examples related to our analysis, policy uncertainty and exchange rate exposure, Mueller et al. (2017) show that some trading strategies based on monetary policy uncertainty can earn extra return in foreign exchange and international capital market, indicating foreign exchange market descends into chaos in case of high policy uncertainty. This implies corporate cash flow dominated in foreign currency will become less predictable, as well as the corporate value. Proceed from corporate governance, policy uncertainty can worsen conflicts between controlling and minority shareholders, by providing extra incentive for controlling shareholders to engage in tunneling (Ongsakul et al., 2021).

We complement and extend the literature about policy uncertainty by discussing how exchange rate exposure react to the economic policy uncertainty. Whether and how uncertainty influence corporate decisions is well-discussed in the previous literature. For instance, several studies show policy-related uncertainty is associated with diving corporate investment, higher cash holding and increasing borrowing cost (Julio and Yook, 2012; Gulen and Ion, 2016; Kaviani et al., 2020). Our study is consistent with those discussions showing corporate actions are affected by the policy uncertainty and contribute to the literature on how policy uncertainty leads a steep in enterprises' exchange rate exposure. This topic is an especially topical issue in China, as numerous scholars investigating and providing support to that Chinese economic and corporate activities can be attributed to policy uncertainty and the magnitude effect is substantial (Holm et al., 2013; An et al., 2016; Lien et al., 2021). We also add to the related literature by focusing on the China market.

3. Data and variable construction

3.1 Measures of policy uncertainty

Using contents of news article, BBD construct news-based economic policy uncertainty (EPU) indices for world major economies. To measure EPU index for China, BBD performs text searches on a Hong Kong-based English-language newspaper, the South China Morning Post (*SCMP*). Specifically, beginning in 1995, the number of China related articles containing at least one term from each of the three term sets: Economics, Policy, and Uncertainty, is accounted in each month. This count is then scaled by the number of all SCMP articles that month. The resulting index is normalized to have mean value of 100 from 1995 to 2011. Following the literature, we average the monthly BBD index in each quarter and take the logarithm as our primary measures (*EPU*).

Note that SCMP is a Hong Kong-based newspaper, may not fully capture wide range of policy uncertainty in China. In addition, it is difficult to construct EPU index by policy category with one newspaper (Huang and Luk, 2020). Using the same BBD's news-based method, Davis et al. (2019) construct the economic policy uncertainty index (*EPU_ML*) based on two mainland Chinese newspapers: the Renmin Daily and the Guangming Daily. Huang and Luk (2020) construct an overall EPU index (*EPU_H&L*) and uncertainty indices for four policy categories using 10 Chinese mainland leading newspapers. We include these alternative measures of China news-based EPU index as a robustness check[4].

3.2 Measures of exchange rate exposure

We use the sensitivity of a firm stock return to the change of foreign exchange rate controlling for market return to proxy its exposure to exchange rate risk (He and Ng, 1998; Bartram et al., 2010; Hutson and Laing, 2014). Specifically, we empirically

[4] To our knowledge, there are three main methods adopted in current literature to measure economic policy uncertainty. First of them is to set a dummy variable based on a certain political event implying considerable uncertainty, such as national election and war (Julio and Yook, 2012; Alesina and Perotti, 1996). Despite the distinctive advantage of exogeneity, lacking in consistency and continuity makes such method less useful for government and corporate policy decisions. Another way is to select a single indicator highly related to the policy change, such as changes in credit spreads (Gilchrist et al., 2014). This method is largely criticized for its arbitrariness and, maybe more important, its reflection on the ex-post consequence of economic policy uncertainty rather than ex-ante prediction. The last method winning widespread recognition is to build a comprehensive index, which is introduced and adopted in our study.

assessed foreign exchange rate exposures by the following regression model:

$$R_{id} = \alpha_i + \beta_i R_{md} + \gamma_i R_{sd} + \varepsilon_{id} \quad (1)$$

where R_{id} is the daily stock return in excess of the risk-free rate, R_{md} is the daily return of the stock market index in excess of the risk-free rate. The risk-free rate is the 3-month benchmark saving rate released by the People's Bank of China (PBOC). The market index is the CSI300 of China's stock market. R_{sd} is the log difference in the daily RMB weighted index (R_{sd} is positive when exchange rate index rises). Following He et al. (2022), we construct RMB weighted index using SDR currency basket (USD, EUR, JPY and GBP) weighted by annual bilateral trade volume in the four foreign currencies. All data are drawn from Bloomberg and the PBOC. Our sample spans from 2010Q3 to 2020Q4[5].

To create a quarterly series of estimated exposure for each firm, we estimate exposure over a series of four-quarter windows according to equation (1). Specifically, γ_{it} is the exchange rate exposure coefficient of firm *i* in quarter *t*, estimated a 4-quarter window, from the current quarter to following four quarters. Following Wei and Starks (2013) and He et al. (2021b), we take its absolute value.

3.3 Other variables

Given a large set of potential determinants of foreign exchange exposure, we include a variety of firm-level and macroeconomic controls, suggested by prior studies in our regression.

Bodnar and Wong (2003) find that large firms have a great exposure in international environment and face higher exchange rate exposure. In contrast, He and Ng (1998) find that firm size is negatively related with exposure, as large firms are more motivated to hedge exchange rate risks (Hutson and Laing, 2014; He et al., 2021b). We use the logarithm of firm's total assets (*size*) as the proxy of its size. Highly indebted firms and firms with inadequate liquidity are vulnerable to financial shocks, and are therefore more likely to hedge the foreign exchange risk (Nance et al., 1993; Wei and

[5] We concentrate on this period because RMB was de facto pegged to the US dollar at the price of 6.82-6.84 per US dollar during the global financial crisis. In June 19, 2010, the PBOC made an announcement declaring further reform of the RMB exchange rate regime, and since then RMB exchange rate speed up its marketization which means currency price is a consequence of market supply and demand.

Starks, 2013). We use debt-to-asset ratio (*leverage*) to measure leverage, and quick ratio (*quick*) as the proxy of firm liquidity. Growing firms that have more serious problem of underinvestment require more stable cash flows and consequently be more sensitive to the fluctuations of foreign exchange rates (He and Ng, 1998; Wei and Starks, 2013). We use book-to-market value of equity (*BM*) to proxy a firm's growth opportunity. A firms' international involvement poses direct and significant influences on its exchange rate exposures (He and Ng, 1998; Hutson and Laing, 2014). We use foreign sales (*oversea*) and foreign loans (*floan*), both scaled by total asset as proxies for a firm's international involvements. We also control for several macroeconomic variables, in order to address the underlying concern that our results may be driven by general economic conditions or economic uncertainty (Bhattacharya et al., 2017; Bonaime et al., 2018; Kaviani et al., 2020). The macroeconomic variables in our main results include inflation, interest spread, business cycle, foreign currency bank loan and exchange rate fluctuation. All consistent variables have been winsorized at both 1% and 99%. We provide a detailed description of all variables used in Appendix A

3.4 Summary statistics

Table 1 presents the summary statistics on our main variables used in this study. Overall, the average exchange rate exposure (absolute value of γ_i) is 0.264 consistent with the finding of He et al. (2021b). Table 1 also presents the summary statistics on economic policy uncertainty indices and control variables. All variables show significant variations over our sample period. We further divide samples into high EPU and low EPU periods based on its median value, and provide the descriptive statistics of exchange rate exposures for both periods in Table 2. It shows that mean (median) values of exchange rate exposure increase from 0.240 (0.183) in low EPU periods to 0.281 (0.209) in high EPU periods. Both mean and median tests for the differences are statistically significant, suggesting that exposure and policy uncertainty are likely to be positively correlated.

[Insert Table 1 here]

[Insert Table 2 here]

In Figure 1, we plot the average of firm-level exchange rate exposure in each quarter with the quarterly *EPU*. Clearly, both plots have the similar patterns, suggesting that high economic uncertainty periods accompanied with high exposures to exchange rate movements. The correlation between *EPU* and average exposure is 0.486, statistically significant at 1% confidence level. The positive correlation seems to be pervasive over whole sample periods. In addition, the pattern of *EPU* reveals that it spikes around the events that are *ex ante* expected to cause an increase in economic policy uncertainty, i.e National Congress of the Communist Party of China in 2012Q4 and 2017Q4, U.S and China trade conflicts in 2018Q2, covid-19 pandemic in 2020Q1. It also exhibits substantial variations between these important events. The figure suggests that policy uncertainty has an independent impact on firm's exchange rate exposure.

[Insert Figure 1 here]

To provide a formal test on the relationship between the average level of exchange rate exposure and policy uncertainty, we estimate a quarterly VAR model with average exposure, policy uncertainty and macroeconomic controls[6]. Our VAR model is as follows[7]:

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \varepsilon_t \quad (2)$$

Where Y_t is a vector of endogenous variables, including the natural logarithm of BBD's measure of policy uncertainty (*EPU*), inflation rate (*CPI*), interest spread between China and US (*IntSpread*), the ratio of fixed asset investment to GDP (*FGDP*), foreign currency bank loan growth rate (*Exloan*), and growth rate of RMB real effective exchange rate index (*REER*) and average level of exchange rate exposure.

To isolate the impact of a policy uncertainty shock on average exposure, we further

[6] Macro variables are consistent with our previous regression model.

[7] Due to the short time periods, we only include on lag in our specification.

impose an order with which shocks propagates through the variables in our VAR analysis. Specifically, the average exposure IRF (impulse response function) is estimated in the following ordering system: the natural logarithm of *EPU*, *CPI*, *IntSpread, FGDP*, *Exloan*, *REER* and average exposure.

The estimated IRF in Figure 2 shows that an economic policy uncertainty shock has a positive significant impact on the average exchange rate exposure, lasting up to four quarters. One percentage increase in EPU is associated with an estimated 3.366% increase in average exposure over the next quarter. This effect is economically large considering that the mean of exposure is 0.264. One standard deviation increase in EPU, is associated with 4.753% increase in exposure, accounting 18% of the sample mean. It implies that on average, policy uncertainty will amplify the impacts of currency movements on firms' fundamental values.

[Insert Figure 2 here]

4. Empirical results

4.1 Main results

We next explore the relationship between policy uncertainty and exchange rate exposure using firm-quarterly panel regressions. We model a firm's exposure in a given calendar quarter as a function of the level of economic uncertainty in prior quarter, controlling lagged firm-level and macroeconomic variables. Our primary regression specification is as follows:

$$|\gamma_{i,t}| = \alpha_0 + \alpha_1 EPU_{t-1} + \alpha_2 controls_{i,t-1} + \theta_i + \epsilon_{i,t} \quad (3)$$

Where $\gamma_{i,t}$ is the estimated exchange rate exposure of firm *i* in quarter *t*. EPU_{t-1} is the natural logarithm of the average of the BBD index in the three months in quarter t-1. $controls_{i,t-1}$ are firm-level controls and macroeconomic variables described above. Firm level variables are measured in the fiscal year ending in the previous quarter, while macroeconomic variables are measured in the prior quarter. θ_i captures the firm fixed effects and $\epsilon_{i,t}$ donates the error term. All t-statistics are clustered at firm level.

Table 3 presents the results on the relationship between policy uncertainty and

firms' exchange rate exposure. It is clear that the coefficients of EPU are positive and statistically significant at 1% confidence level, confirming our expectation that policy uncertainty is associated with higher exchange rate exposure. This result remains unchanged when we include an array of firm-level determinants of exposure and macroeconomic variables as well as quarter and firm fixed effects. The marginal effects associated with EPU coefficients in the full specification (Column 4) suggest that that one percentage increase in the economic policy uncertainty index is associated with an increase in exposure by 0.074. Given that the average of exposure is 0.264, 0.0074 increase in exposure is economically large, corresponding to 28% of the sample average.

Turning to the control variables, we find negative and significant (at 1% level) sign on the coefficients of quick ratio (*quick*). Consistent with previous findings (Nance et al., 1993; Hutson and Laing, 2014), firms with adequate short-term liquidity are less exposed to currency movements, as liquidity can substitute for hedging, reducing the sensitive to cash flow volatility caused by exchange rate shocks. The book-to-market ratio (*BM*) is significantly positive (at 1% level); consistent with the hedging theory (Géczy et al., 1997; Guay and Kothari, 2003; Huang et al., 2019), firms with greater growth opportunity have strong incentives to hedge cash flow risk caused by exchange rate fluctuation, and hence exhibit a lower exposure. Oversea sales (*oversea*) and foreign loan (*floan*) are found to be insignificant in all specifications, and this is consistent with Choi and Jiang (2009) and He et al. (2021b). Most macroeconomic variables exert significant impacts on firms' exchange rate exposure. For instance, the coefficients on interest spread (*IntSpread*) (0.006 with a t-statistic of 3.05) and REER (*REER*) (0.388 with a t-statistic of 7.79) show a strong positive relationship between foreign exchange market conditions and exchange rate exposure, consistent with the intuitive hypotheses that the volatility of foreign exchange markets leads to higher firms' exposure to currency movements. We also find economic conditions, i.e inflation rate (*CPI*) and fixed investment (*FGDP*), have significant impacts of firms' exchange rate exposure.

Overall, the results in column (2)-(4) confirm that neither firm characteristics nor macroeconomic conditions explain the relationship between policy uncertainty and

firms' exchange rate exposure. However, it is still possible that we don't fully control economic conditions or foreign exchange market volatility, or this result is driven by the certain policies generating this uncertainty. We address these issues in following sections.

[Insert Table 3 here]

4.2 The effects of hedging

Hedging is a key strategy for a firm to cope with foreign exchange risk. Bartram and Bodnar (2007) argue that foreign exchange rate exposure is largely minimized, if firms can manage exchange rate risk rationally via operational hedging or financial hedging. The former involves multinational operations to diversify currency revenue, match revenue and cost in the same currency, and operational flexibility to shift their operations across countries (Bodnar and Marston, 2002; Hutson and Laing, 2014). The financial hedging involves a range of foreign currency derivative usage (Aggarwal and Harper, 2010; Allayannis et al., 2012). Numerous empirical studies have examined the relationship between foreign exchange exposure and the usage of operational and financial hedging tools. For instance, Pantzalis et al. (2001) find that the geographical dispersion of a firm's international actives is negatively related with exchange rate exposure. Allayannis and Weston (2001) shows that foreign currency derivatives are effective instrument to hedge against exchange rate fluctuations.

If policy uncertainty has a significant impact on firms' exchange rate exposure, its impacts should vary on the extent of a firms' operational or financial hedging. To measure financial hedging, we use an indicator variable *drvtv*, which equals one if a firm report the usage of currency derivative in a year, and zero otherwise (Allayannis and Weston, 2001; Huston and Laing, 2014). As for the measure of operational hedging, we use "*brdth*", which equals one if the number of continents where a firm has subsidiaries is greater than 3, and zero otherwise, as Pantzalis et al. (2001) find that the

breadth can capture the geographical dispersion of a firm's international involvements[8]. Empirically, the dummy indicator for hedging, *drvtv* or *brdth*, and its interaction with *EPU* are incorporated in our benchmark regression.

Table 4 presents the results. The first two columns report that the interaction of EPU and *drvtv* is insignificant, suggesting that financial hedging activities have no significant impact on the nexus of EPU and exchange rate risk exposure. Consistent with the findings of He et al. (2021b), Chinese firms have limited ability, or inability to financially hedge against unfavorable currency movements, because of underdeveloped currency derivative markets in China. Column (3) and (4) report that the interaction of EPU and *brdth* is significantly negative, suggesting that operational hedging can moderate the impact of EPU on exposure. This result lends supports to the findings of Pantzalis et al. (2001), who find that operational hedges provide better protection against adverse currency movements than financial hedging.

4.3 Heightened exchange rate volatility

Obviously, unusual exchange rate fluctuations will let firms more exposed to currency movements. To examine whether the positive impacts of policy uncertainty on exposure survives during times of heightened exchange rate volatility, we focused on two scenarios: the 811 reform and Covid-19 pandemic. The 811 reform represents one of China's biggest steps in the transition process toward RMB exchange rate flexibility, but the RMB experienced a short period of high volatility during this time. Covid-19 pandemic in 2020 has a widespread impact on global financial markets (He et al., 2020). We calculate the standard deviation of exchange rate index of SDR currency for the period 2015Q3-2016 Q2 (811 reform) and the period 2019Q4 to 2020Q3 (Covid-19 pandemic), find that it jumps from a mean of 0.471 in other periods to 0.601 in the two sub periods.

Column (1) and (4) show that the positive relationship remains significant at the 1% level or better. The magnitude of coefficients are several times larger than the results in benchmark regressions (Table 3), indicating that policy uncertainty has a pronounced

[8] Using a sample of US multinational firms, Pantzalis et al. (2001) show that breadth is significantly negatively related with firms' exchange rate exposure

impact on exposure during high exchange rate volatility periods.

Note that the benefits of hedging might weaken in times of heighten exchange rate volatility, as firms conduct selective hedging, that is, they hedge currency risk only when they believe exchange rate to move against them. The selective hedging strategy is found to be inadequate because exchange rate movements are largely unexpected in short periods with heightened exchange rate volatility (Bodnar et al., 2011). Using a sample of US firms around the crisis (2007-2008), Huston and Laing (2014) find that financial hedging lost its effectiveness, while operational hedging are robust as a risk management tool. To test the role of hedging in times of heightened exchange rate volatility, we include proxies of hedging, *drvtv, brdth* and their interaction terms with *EPU* in the regression. Consistent with the results in Panel A, both *drvtv* and its interaction term, EPU×*drvtv*, are still not significant in both sub periods (Column (2) and (3)). It is unsurprising given that derivative markets are underdeveloped and firms suffer a high hedging cost in China. Financial derivatives fail to hedge against exchange rate risks, and firms therefore experience direct exchange rate exposure with a rise in policy uncertainty. In contrast to the findings of Huston and Laing (2014), the interaction terms, *EPU*×*brdth*, are no longer significant in the two sub periods (Column (5) and (6)). This apparent failure of international operation indicates that international operation can't fully manage firms' exchange rate risks when exchange rates are largely unpredictable in the short-terms. A possible explanation is that international operation is a longer-term hedge technique, and primarily plays role on longer-term exposures (Muller and Verschoor, 2006).

[Insert Table 4 here]

5 Robustness

5.1. Alternative specifications

To verify the robustness of our main results (Table 5), we first consider alternative measures of exchange rate exposure. Starting from 2015, China Foreign Exchange Trade System (CFETS) publishes an RMB currency index, which is an aggregate proxy

for the Chinese RMB exchange rates against a basket of currencies of 13 countries, including both emerging and developed economies. The index is the average of daily CNY Central Parity Rate weighted by the international trade denominated with each foreign currency. In 2017, CFETS increases the number of currencies in the basket from 13 to 27. We thus construct trade weighted index for currencies of developed, emerging and whole countries according to 27 currencies in the CFETS basket. Specifically, using equation (1) and different weighted RMB index, we estimate the firms' exposure to the exchange rate of all currencies (*Exposure_a*), developed economies' currencies (*Exposure_d*) and emerging economies' currencies (*Exposure_e*). We then estimate the impacts of policy uncertainty on these three alternative measures, and report results in Table 5.

Columns (1)-(3) in Table 5 show that, policy uncertainty is significantly associated with higher exchange rate exposure in the three alternative measures. Interestingly, the magnitude of the EPU coefficients in developed currencies (Column 2) is almost three times larger than that of the exposure to emerging market currencies (Column 3). It may suggest that Chinese firms are more susceptible to currency movement of developed countries' currencies.

We also examine the sensitivity of our main results to the alternative specifications. In Column (4), we further move the EPU ahead two quarters and examine whether policy uncertainty in quarter t-2 influence exposure in quarter t. To address the possible estimation error, we re-estimate Equation (2) by weighting each sample as the inverse of its standard error, and report the results in Column (5)[9]. Someone may argue that absolute exposure produces truncation bias. We thus follow Dominguez and Tesar (2006) to take the square root of $|\gamma_{i,t}|$ as independent variable, and re-estimate our baseline equation (Column 6). To address the concern that the relationship between policy uncertainty and exchange rate exposure is simultaneous (Bartram and Bodnar, 2012; He et al. 2020), we also conduct generalized methods of moments (GMM) to re-

[9] WLS approach reduces the extent of estimation errors biasing our results (Hutson and Liang, 2014; He et al., 2021b).

estimate the results in a dynamic panel setting (Column 7). Note that potential cross-sectional and serial correlation may bias our error term (Petersen, 2009), we re-estimate our baseline equation by clustering the standard errors at both the firm and calendar-quarter level (Column 8). All results remain qualitatively unchanged, and confirm that policy uncertainty has significantly positive impact on firms' exchange rate exposure.

While our main specification has controlled several macroeconomic variables, it is possible that the measure of *EPU* is still related with other macroeconomic factors. To further isolate the impacts of policy uncertainty, we consider several additional commonly used proxies for macroeconomic uncertainties (Rossi and Sekhposyan, 2015; Aastveit et al., 2017), and include them in our baseline regression (Column 1 of Panel B)[10]. Our test relies on BBD's measure of policy uncertainty as our primary measure of policy uncertainty index. One concern is that this index may not fully capture the economic policy uncertainty in China, as BBD only use South China Morning Post (SCMP), a Hong Kong based newspaper to extract news content. In addition, it is not able to construct category-specific policy uncertainty indices. In this section, we introduce two additional policy uncertainty indices to confirm the positive relationship between EPU and exposure, and compare the effects on exposure across different policy category indices.

Following BBD's compilation strategy, Davis et al. (2019) construct the economic policy uncertainty index (*EPU_ML*) based on two Chinese mainland newspapers: the Renmin Daily and the Guangming Daily. Huang and Luk (2020) select ten Chinese mainland leading newspapers[11], construct an overall EPU index (*EPU_H&L*) and uncertainty indices for four policy categories, namely fiscal policy (*EPU_fsc*), monetary policy (*EPU_mn*), trade policy (*EPU_trd*) and exchange rate and capital

[10] We include more macro control variables additionally, i.e. GDP, IndValue, Imprt, Exprt, FrgRsv, FscRvn, FscExp and three principal component factors with the eigenvalues larger than 1 extracted from the gap between predicted and actual value of a series of general macroeconomic variables, including GDP, IndValue, Imprt, Exprt, M2, RetSale, FixInv, Intrst, PPI, USDCNY. Their detailed descriptions are reported in appendix.

[11] Huang and Luk (2020) obtain news contents from the digital archives, *Wisers Information Portal*, which include 114 newspapers in China. They select ten out of 114 newspapers because the ten newspaper has complete series of data and are distributed in China's major cities.

account policy (*EPU_ec*).

The results reported in Table 5 Panel B uniformly confirm that overall high policy uncertainty is associated with high levels of firm exchange rate exposure (Column (1) to Column (3)). The result is also economically large. The coefficient of *EPU_ML* is 0.042, suggesting that one standard deviation increase in *EPU_ML* is associated with an increase in exposure by 0.022 (0.517×0.042), corresponding to 8.225% of the sample average. To access which policy category index is likely to drive our results, we run our regression separately using policy uncertainty index of each policy category constructed by Huang and Luk (2020). Column (4) and Column (7) show that the fiscal policy uncertainty (*EPU_fsc*) and trade policy uncertainty (*EPU_trd*) have strong positive impacts on firms' exchange rate exposure. This is not surprising, since trade policy plays a key role in the firms' international operation, and fiscal policy (both tax and government purchase) is directly relevant to firms' operational cash flows. Monetary policy uncertainty is also positively related with exchange rate exposure (Column 5), while we find no evidence that exchange rate and capital account policy uncertainty is related with corporate exchange rate exposure (Column 6). A possible explanation is that monetary policy plays a key role in driving uncertainty (Bonaime et al., 2018), while exchange rate and capital account policy changes infrequently, and are relatively less sources of policy uncertainty.

[Insert Table 5 here]

5.3. Endogeneity

A major empirical challenge is to identify the causal effect of policy uncertainty on firms' exchange rate exposure. We can safely dismiss the possibility of reverse causality because each firms' exposure is clearly too small to influence a country's economic policy uncertainty. Hence, the main identification challenge is whether EPU is correlated with other factors that simultaneous affect the firms' exposure. We conduct two additional tests to alleviate these endogeneity concerns.

First, BBD's EPU index may be contaminated by economic uncertainty that has a

large impact on firms' exchange rate exposure but unrelated to policy uncertainty. Although we have controlled a large number of economic condition and foreign market condition variables, concerns remain on the measurement of policy uncertainty index (Gulen and Ion, 2016; Kaviani et al., 2020). We thus introduce additional tests by using the residual policy uncertainty as an alternative independent variable (Kaviani et al., 2020). Specifically, the residual policy uncertainty is estimated as follows:

$$EPU_t = \delta_0 + \delta_1 EPU\_foreign_t + \sum \delta_n Macro\ Factors_t + EPU\_R_t \qquad (4)$$

EPU_foreign is foreign countries uncertainty index, and measured as a principal component factor with the largest eigenvalue extracted from the logarithm of the seven EPU index of foreign countries, including USA, UK, Japan, EU, India, South Korea and Russia. Note that China maintains close trade relationships with above seven economies. Economic shocks that affect these economies could exert impacts on Chinese economies. $Macro\ Factors_t$ include the same macroeconomic variables in our baseline regression.

EPU_R provides a cleaner measure of policy uncertainty by taking out the part of EPU only reflecting economic uncertainty. Column (1)-(2) of Table 6 report the estimation results. In both specifications, the coefficients are positive and statistically significant at 1 percent level. The magnitude of coefficients is lower than those reported in Table 3. It suggests that measure errors influence the relationship between EPU and exposure, but policy uncertainty still has a significantly positive impacts on firms' exchange rate exposure.

Second, to further alleviate endogeneity concerns, we propose a novel instrument variable, the number of geological disasters, for policy uncertainty. A number of studies have found that natural disaster has significant impacts on a country's political stability and legitimacy (Abney and Hill, 1966; Quarantelli and Dynes, 1977; Gasper and Reeves, 2011; Cavallo et al., 2013). Politicization of natural disaster is common, as disaster related issues, i.e. victims, society grievances, and relief works, give a rise to intensified political contestation and social conflicts. For instance, Hurricane Sandy has influenced voter's attitude and participations in the president election of 2012, and

might have played a role on Barack Obama's re-election. China is not an exception. In particular, China has a party-centric political system, and places explicit emphasis on the need to keep society stable and ahead of economic performance (Zhao, 2010; Yang, 2022). To deal with natural disaster, Chinese government conduct various policies focusing on the disaster relief and social stability, i.e. fiscal transfer and subsidies, and postpone the controversial policies that may aggravate tensions[12]. As a result, while China incurs great economic costs when natural disasters and mishaps hit, Chinese government is likely to keep its consistency in economic policy[13]. Note that geological disasters are due to natural geological forces, for instance, earthquakes, tsunamis, volcanic eruptions, and landslides. Compared to other natural disaster, i.e. whether-related disaster, geological disasters are largely unpredicted and have adverse impacts in human activities (Geller et al., 1997). China is a country with many serious geological disasters, and geological disasters distribute unrhymed over time. During our sample period, the number of geological disasters range from around three thousand in 2018 to more than one hundred thousand in 2006. We use the natural logarithm of the number of geological disasters in a year (*Disaster*) as instrumental variable for policy uncertainty, and report our 2SLS results in Table 6.

Column (3)-(4) show that policy uncertainty has positive and statistically significant impacts on firms' exchange rate exposure (Second stage). The magnitude of *EPU* coefficients (0.094 and 0.099) are larger than that of specifications without instrument variables. The first stage reports that *Disaster* is negative significantly associated with economic policy uncertainty in both specifications. The *F*-statistics for the first stage regressions are above 10 and t-statistics for the instrumental variables are above 3.6, which is sufficiently enough to conclude that weak instrument problem is unlikely.

Column (5) reports the results using EPU_R as alternative measure of policy uncertainty. With *Disaster* as the instrument, the coefficient of EPU_R is positive

[12] In response to Wenchuan Earthquake, national ministries and commissions placed a great emphasis on maintaining the continuity and stability of financial support policies and minimized the adverse influence of policy uncertainty, such as suspending the decision of raising the reserve requirement ratio for financial institutions in afflicted area.
[13] In addition, Nordhaus (2012) argues that there is no optimal policy in case of tail events, like earthquakes, indicating the best action for policy makers is no action when facing catastrophic disasters.

(0.271) and significant at 1 percent level (t-statistic=3.15), in line with the *EPU* results. These results lend supports that policy uncertainty has causal positive effects on firms' exchange rate exposure.

[Insert Table 6 here]

6. Why does policy uncertainty affect exchange rate exposure?

In this section we investigate the channels through which policy uncertainty could affect a firm's exchange rate exposure. We examine whether the positive effect of policy uncertainty on exposure differs across firms. We focus on three reasons why this might be the case. First, firms differ in their extent of international involvements. If international involvements are not equally costly across firms, we should observe cross-section variations exposures to exchange rate risks in a response to a rise in policy uncertainty. Second, uncertainty could encourage managers to believe they can engage in self-serving dealings without immediate consequences, increase the risk exposure by poorly governed firms (He et al., 2021b). Third, uncertainty changes the willingness and cost to hedge. Higher uncertainty could incentivize manager to engage in more risk managements (e.g., Nguyen et al., 2018). Nevertheless, uncertainty is associated with higher cost of conducting hedges, preventing firms from actively managing currency risks.

6.1 International operation

It is well-established that international operation incurs significant cost, and is one of major sources of firms' exchange rate exposure (Wei and Starks, 2013; He et al., 2021a). Thus, one straightforward channel through which policy uncertainty influence firm's exposure is policy's direct impacts on revenues and cots of firm's international business. It follows that the positive relation between exposure and *EPU* is more pronounced for firms that are heavily involved in international business. For example, ZTE, the second-largest Chinese telecom-equipment maker, heavily sells its equipment in US markets. ZTE suffers a loss of around 3 billion dollars due to tariffs and trade barriers arising from the intensified US-China trade conflicts in 2019.

To test this hypothesis, we construct three proxies for firm's involvement on international operation and examine whether the extent of international involvements influence the relationship between EPU and exchange rate exposure. Specifically, we use firms' foreign sales ratio as our first measure of international operation (*oversea*). This measure quantifies the extent of a firms' revenue received from international markets. We report the estimates in Column (1) and (2) in Table 7. The coefficient of our interest is the interaction term, *EPU*×*oversea,* as it captures how foreign revenue affects the positive impacts of EPU on firms' exchange rate exposure. The interaction term coefficient is positive and statistically significant at 1 percent level. These results confirm that firms with high foreign revenue is more sensitive to changes in policy uncertainty.

International industry competition is another important source of firms' exchange rate exposure. Williamson (2001) shows that industries differ in their structures and competition environments. Industry competition plays a vital role on firms' exchange rate exposure, as firms facing high foreign competition have a high demand elasticity, and thus their revenue are more sensitive to currency movements. To measure the extent of international industry competition, we use the same procedure of Griffin and Stulz (2001) and He et al. (2021a), and the excess return of Chinese industry is regressed on that of US counterpart industry. A negative coefficient indicates that China industry's performance is worse when the US industry does better relative to its market. We define a dummy variable, *cmpt*, that equals one if the coefficient is significantly negative and zero otherwise. Column (3) and column (4) in Table 7 report the results. The coefficients of interaction term, EPU×*cmpt*, are positive and highly significant. The effect is also large: the response of exposure to policy uncertainty in highly competitive industries is 13.917% ((0.0309-0.0271)/0.0271) larger than that in low competitive industries. It supports the hypothesis industry competition amplify the impacts of policy uncertainty on exposure.

Finally, we use the ratio of foreign loan over total loans (*floan*) as our third measure of international operation. Many emerging market economies, like China, raise debts invoicing in foreign currency, and inevitably need to make timely repayment on

principal and interest. Its cash flows therefore are sensitive to any large adjustment on exchange rate movements (Salomao and Varela, 2022). The coefficients of interaction term, *EPU*×*floan*, are both significant positive and similar in magnitude (Column (5) and Column (6)). These findings suggest that firms heavily rely on foreign currency loan have their exposure that are more sensitive to changes in policy uncertainty.

Overall, these findings are consistent with our hypothesis that a firm's international involvements strengthen the relationship between policy uncertainty and exchange rate exposure.

[Insert Table 7 here]

6.2 Rent seeking

Policy uncertainty creates a lenient environment that is capable of accepting the failure of decisions, raising the possibility of rent seeking activities under the cover of economic policy uncertainty. Previous literature, e.g. Duchin and Schmidt (2013), suggest that poorly governed firms are more likely to engage in empire-building and initiate suboptimal mergers when uncertainty attracts the attentions of supervisors and minority shareholders. Insiders' rent seeking are widespread in emerging markets with weak market discipline, such as China. A number of studies have found that corporate insiders can engage in self-dealing transactions or risky business activities for their private benefits (Cheung et al., 2006; He et al., 2022). It follows that if policy uncertainty is associated with more transactions motivated by insiders' rent seeking, we should expect more rent seeking activities in periods of high policy uncertainty periods. It translates into a higher exchange rate exposure, as firms' cash flow volatility increase when an adverse exchange rate shock hits.

In Panel A of Table 8, we compare averages (median) of proxies for insiders' rent seeking activities for high EPU period and low EPU period. We split the sample into high and low EPU periods, based on the mean of EPU over our sample period. Following the literature (Shleifer and Vishny, 1997; Roulstone, 2003; Cheung et al., 2006; Jiang et al., 2010; He and Rui, 2016), we consider three corporate activities that

are most likely associated with self-dealing transactions or risky business activities, namely, related party transactions (RPT), other accounts receivables and executive compensation[14], scaled by the prior year's total sales. Note that corporate insiders can use RPTs to either prop up or tunnel a corporation. We thus only focus on tunneling-motivated RPTs that harm the interests of minority shareholders (Cheung et al., 2006; Jian and Wong, 2010). More specifically, we perform an event study using all the events of RPTs, and estimate announcement CARs over the event window of [-1, 1]. We classify RPTs as harmful if the CAR [-1, 1] is negative.

Our results show that the averages of harmful RPTs, other accounts receivables and executive compensations are 0.310, 0.03 and 0.226 in low EPU periods, while increased to 0.258, 0.031 and 0.235 in high EPU periods, respectively. The last two columns of Panel A reveal that the differences between periods of low versus high policy uncertainty are statistically at one percent confidence level. Hence, our findings are consistent with the hypothesis that insiders conduct more rent seeking during high EPU periods.

If rent seeking is an important channel through which policy uncertainty affects firms' exchange rate exposure, this effect will be moderated by better corporate governance. As well governed firms largely cut off insiders' opportunities of rent seeking (Shleifer and Vishny, 1997; He and Rui, 2016), the EPU-exposure relationship should significant weaker (less positive) for such firms. To test this prediction, we include the following corporate governance proxies and their interactions with EPU (one-by-one) to our benchmark regressions: the separation of cash flow and control rights (*sprt*); CEO serving as the board chairman (*dual*); the corporate transparency index released by Shanghai and Shenzhen stock exchanges (*trnsp)*[15]; the percentage of

[14] For example, Jiang et al. (2010) note the widespread use of other accounts receivables. Cheung et al. (2006) show that minority shareholders experience significant value losses when companies undertake related party transactions. Roulstone (2003) finds that firms with insider trading restrictions are required to pay a premium in total executive compensation.

[15] Corporate transparency describes a firm's information environment and reduce information cost of outsiders. The corporate transparency index released by Shanghai and Shenzhen stock exchanges refers to official annual evaluation

institutional investors shareholding (*instown*), and the number of analysts following the firms (*analyst*). The first two indictors are proxies for corporate internal governance. Both *sprt* and *duality* are positively related with insiders' entrenchment, and allow them to seek extra private benefits of controls (Claessens et al., 2002; He et al., 2019). We expect that their interactions with EPU are positive, as the positive impacts of policy uncertainty are more pronounced in the poorest level of internal corporate governance. The rest three indicators represent the strength of external governance. If external governance mechanism works well, for instance, transparency mitigates information asymmetry, institutional investors play an active role on corporate monitoring, insiders' rent seeking activities are presumably more constraint [16]. It follows that their interactions with EPU should be negative, as improved external governance reduces the EPU-exposure links through a rent seeking channel.

Column (1) and (2) of Panel B reports that the coefficients of *EPU*×*sprt* and *EPU*×*dual,* are significantly positive, confirming that policy uncertainty has stronger impacts on exposure for firms with poor internal governance. The last three columns of Panel B show that the interactions between our three external governance proxies and EPU are all negative and statistically significant at conventional confidence level. These findings suggest that the EPU-exposure link is meaningfully related to the level of firm's external governance. Overall, our results provide evidence that insiders' rent seeking is a channel through which policy uncertainty impact firms' exchange rate exposure.

[Insert Table 8 here]

6.3 Risk management

on the standardized operation related to information disclosure of listed companies, divided into four ratings, "ABCD", from high to low. The variable we set, *trnsp*, equals 1 if the rating is "A", and equals 0 otherwise.

[16] The introduction of institutional investors plays a positive governance role by virtue of their own professional and independence advantages. Institutional investors provide an effective way to balance major shareholders and alleviate the "insider control" problem by means of on-site investigation and participation in proposals. The governance effect of institutional investors also increases the cost of tunneling, as well as grabbing private benefits under the cover of uncertainty.

Results in Table 4 show that firms' hedging activities, particularly for operational hedging, can mitigate the impacts of adverse currency movements on firms' values. If firms use hedges more intensively facing an increase in policy uncertainty, their cash follows will be less sensitive to the exchange rate risks. Note that this risk management mechanism could not be the primary channel through which policy uncertainty influence firms' exposure, which suggests a negative linkage of EPU and exposure, whereas we find a positive relationship between EPU and exposure. Nevertheless, firms' risk management incentives will exert significant impacts on the extent policy uncertainty influence exposure.

If policy uncertainty prompt Chinese firms to look for currency risk management, we expect high policy uncertainty periods are associated with more intensive use of hedging tools. To test this prediction, we conduct a multivariate analysis to examine whether policy uncertainty increases the likelihood of engaging in financial hedging and operational hedges. Specifically, in line with existing literature (Nguyen et al., 2018), we use the following logit model specification:

$$Hegde_{it} = \beta_0 + \beta_1 EPU\_Y_{t-1} + \beta_2 controls_{i,t-1} + ind_i + \epsilon_{i,t}$$

Where $Hegde_{it}$ refers to $drvtv_{it}$ or $brdth_{it}$. $drvtv_{it}$ is dummy variable, that equals one if a firm report the usage of currency derivative in year t, and zero otherwise. $brdth_{it}$ is a dummy variable, that equals one if the number of continents where a firm has subsidiaries is greater than 3 at year t, and zero otherwise. EPU_Y_{t-1} is the average of EPU in year t-1. We control the firm-specific variables used in the benchmark specification. In addition, we also include *crslist*, *PERGDP* and *VIX*. Their detailed descriptions are reported in appendix. ind_i represents the industry fixed-effect.

Column (1) - (3) in Table 9 exhibit the results of financial hedging. The estimated coefficients of EPU_Y_{t-1} are positive and statistically significant at the 1% confidence level. Specifically, one standard deviation increase in EPU is associated with about 62.870% ($0.758\times (e^{0.604}-1)$) increase in likelihood of using financial derivatives, indicating that listed companies in China are more likely to purchase foreign exchange derivatives in response to high EPU. This result is consistent with Bartram et al. (2009) and Nguyen et al. (2018). Considering the vital role of stable and predictable cash flows

in alleviating underinvestment problem and reducing the possibility of financial distress and the accumulation of payment to corporate tax (Smith and Stulz, 1985; Nance et al., 1993), the incentives for smoothing the volatile cash flow affected by high EPU shock are improved, in despite of the fact that only a small minority of firms have the ability and access to financial hedging activities eventually due to the underdeveloped foreign exchange derivatives market in China.

Interestingly, unlike financial hedging, operational hedging has the opposite results. Column (4) to Column (6) display that the EPU has negative and statistically significant effect on operational hedging. Specifically, one standard deviation increase in EPU is associated with about 8.308% ($0.758\times (e^{0.104}-1)$) decrease in likelihood of adopting operational hedging. Combined with the actual corporation system in China, this result makes sense as well, because operational hedging usually requires long-term planning and arrangements, which is not as convenient and prompt as purchasing derivatives in a bank. Even if the board of managers are efficient enough to make the global expansion decisions in time, to open a production plant overseas or to shift the source country of inputs requires a series of bureaucratic procedures, such as government approvals and resources allocation, making it a long-term project and hard to initiate simply with short-term influence factors like EPU (Kim et al., 2006; Aretz and Bartram, 2010; Hoberg and Moon, 2017). In comparison, the usage of financial hedging, sometimes just a phone call to the bank, is more flexible relatively and suitable for hedging short-term exposure (Chowdhry and Howe, 1999). Beber et al. (2009) observe that firms manage to increase the derivatives trading volume in time to cope with high uncertainty and unwind these derivatives positions shortly after that. Furthermore, with expectation about revenue disrupted by high EPU, the corporate oversea investment is deferred and even depressed temporarily during high EPU period, minimizing the moderating effect of operational hedging.

Overall, the hedging strategies Chinese firms adopt are far from mature and active at present. To be specific, as a relatively flexible hedging instrument, financial hedging has gained recognition and application of some firms in response to EPU shock, but it has limited impact on the nexus of EPU and exchange rate exposure, implying that the

financial hedging usage is entirely inadequate and poorly efficient in China. Whereas, the moderating effect of operational hedging on the nexus of EPU and exchange rate exposure is statistically significant, however, as a long-term project, operational hedging is depressed by EPU in the short run and its moderating function may be minimized by that.

[Insert Table 9 here]

7. Conclusion

We propose a novel and significant influence factor, uncertainty surrounding government economic policies, for firms' exposure to exchange rate volatility. By focusing on China, a typical emerging market country surrounding with policy uncertainty, we find an economically positive and highly statistically significant relationship between EPU and exposure. Moreover, this positive relationship is more pronounced in heightened exchange rate volatility period, such as the year after "811 Reform" or the break of Covid-19 Pandemic. Generally, there are two main risk management tools for firms to alleviate the influence of exchange rate movement, namely financial hedging and operational hedging. However, in case of policy uncertainty, our results show that operational hedging manage to moderate the impacts of EPU on firms' exposure significantly, while financial hedging make an insignificant effort, probably due to high hedging cost of corporate and underdeveloped foreign exchange derivatives market in China. A variety of robustness tests, including alternative measures and different specifications, are conducted to guarantee the validity of our results. Besides, in order to address the potential endogeneity concerns, we firstly try to rule out the contamination of general economic condition uncertainty and introduce the residual policy uncertainty as alternative independent variable. Furthermore, we use the number of geological disasters as instrumental variable for economic policy uncertainty, considering that the policy makers usually attach importance to social and political stability and are unlikely to release uncertainty signals in response to disasters happened. Our main finding that economic policy uncertainty

pushes up firms' exposure to exchange rate fluctuations is confirmed robust.

For exploring an interesting question that why does economic policy uncertainty influence exchange rate exposure, we next investigate three possible channels: international operation, corporate governance, and risk management. Not surprisingly, with cash flow fluctuation more sensitive to EPU, the exchange rate exposure of international firms suffers a more striking effect of EPU. Secondly, considering poorly governed firms engage in self-serving transactions more intensively under the cover of high policy uncertainty, our results demonstrate that better corporate governance and information transparency can weaken the impact of EPU on firms' exposure. Last but not least, we also find that Chinese listed firms tend to adopt financial hedging more intensively in response to high EPU shock, whereas the long-term hedging instrument, operational hedging usage would experience a decline with expectations disrupted by EPU, likely to damage the moderating functions of the nexus of EPU and exchange rate exposure.

Reference

Aastveit, Knut Are; Gisle James Natvik and Sergio Sola. 2017. "Economic Uncertainty and the Influence of Monetary Policy." *Journal of International Money and Finance*, 76, 50-67.

Abel, Andrew B. 1983. "Optimal Investment under Uncertainty." *American Economic Review*, 73(1), 228-33.

Abney, F Glenn and Larry B Hill. 1966. "Natural Disasters as a Political Variable: The Effect of a Hurricane on an Urban Election." *American Political Science Review*, 60(4), 974-81.

Adler, Michael and Bernard Dumas. 1984. "Exposure to Currency Risk: Definition and Measurement." *Financial Management*, 13(2), 41-50.

Aggarwal, Raj and Joel T. Harper. 2010. "Foreign Exchange Exposure of "Domestic" Corporations." *Journal of International Money and Finance*, 29(8), 1619-36.

Alesina, Alberto and Roberto Perotti. 1996. "Income Distribution, Political Instability, and Investment." *European Economic Review*, 40(6), 1203-28.

Allayannis, George; Ugur Lel and Darius P Miller. 2012. "The Use of Foreign Currency Derivatives, Corporate Governance, and Firm Value around the World." *Journal of International Economics*, 87(1), 65-79.

Allayannis, George and James P Weston. 2001. "The Use of Foreign Currency Derivatives and Firm Market Value." *Review of Financial Studies*, 14(1), 243-76.

Altig, Dave; Scott Baker; Jose Maria Barrero; Nicholas Bloom; Philip Bunn; Scarlet Chen; Steven J. Davis; Julia Leather; Brent Meyer; Emil Mihaylov, et al. 2020. "Economic Uncertainty before and During the Covid-19 Pandemic." *Journal of Public Economics*, 191, 104274.

An, Heng; Yanyan Chen; Danglun Luo and Ting Zhang. 2016. "Political Uncertainty and Corporate Investment: Evidence from China." *Journal of Corporate Finance*, 36, 174-89.

Arellano, Cristina; Yan Bai and Patrick J Kehoe. 2019. "Financial Frictions and

Fluctuations in Volatility." *Journal of Political Economy*, 127(5), 2049-103.

Aretz, Kevin and Söhnke M Bartram. 2010. "Corporate Hedging and Shareholder Value." *Journal of Financial Research*, 33(4), 317-71.

Baker, Scott R.; Nicholas Bloom and Steven J. Davis. 2016. "Measuring Economic Policy Uncertainty." *Quarterly Journal of Economics*, 131(4), 1593-636.

Bartram, Söhnke M. 2019. "Corporate Hedging and Speculation with Derivatives." *Journal of Corporate Finance*, 57, 9-34.

Bartram, Söhnke M and Gordon M Bodnar. 2012. "Crossing the Lines: The Conditional Relation between Exchange Rate Exposure and Stock Returns in Emerging and Developed Markets." *Journal of International Money and Finance*, 31(4), 766-92.

____. 2007. "The Exchange Rate Exposure Puzzle." *Managerial Finance*, 33(9), 642-66.

Bartram, Söhnke M.; Gregory W. Brown and Frank R. Fehle. 2009. "International Evidence on Financial Derivatives Usage." *Financial Management*, 38(1), 185-206.

Bartram, Söhnke M.; Gregory W. Brown and Bernadette A. Minton. 2010. "Resolving the Exposure Puzzle: The Many Facets of Exchange Rate Exposure." *Journal of Financial Economics*, 95(2), 148-73.

Beber, Alessandro; Michael W Brandt and Kenneth A Kavajecz. 2009. "Flight-to-Quality or Flight-to-Liquidity? Evidence from the Euro-Area Bond Market." *Review of Financial Studies*, 22(3), 925-57.

Bernanke, Ben S. 1983. "Irreversibility, Uncertainty, and Cyclical Investment." *Quarterly Journal of Economics*, 98(1), 85-106.

Bhattacharya, Utpal; Po-Hsuan Hsu; Xuan Tian and Yan Xu. 2017. "What Affects Innovation More: Policy or Policy Uncertainty?" *Journal of Financial and Quantitative Analysis*, 52(5), 1869-901.

Bloom, Nicholas. 2009. "The Impact of Uncertainty Shocks." *Econometrica*, 77(3), 623-85.

Bodnar, Gordon M; Erasmo Giambona; John R Graham; Campbell R Harvey and Richard C Marston. 2011. "Managing Risk Management," AFA 2012 Chicago Meetings Paper.

Bodnar, Gordon M and MH Franco Wong. 2003. "Estimating Exchange Rate Exposures: Issues in Model Structure." *Financial Management*, 32(1), 35-67.

Bodnar, Gordon M.; Bernard Dumas and Richard C. Marston. 2002. "Pass-through and Exposure." *Journal of Finance*, 57(1), 199-231.

Bonaime, Alice; Huseyin Gulen and Mihai Ion. 2018. "Does Policy Uncertainty Affect Mergers and Acquisitions?" *Journal of Financial Economics*, 129(3), 531-58.

Brown, Gregory W. 2001. "Managing Foreign Exchange Risk with Derivatives." *Journal of Financial Economics*, 60(2), 401-48.

Campa, José Manuel and Jose M González Mínguez. 2006. "Differences in Exchange Rate Pass-through in the Euro Area." *European Economic Review*, 50(1), 121-45.

Cao, Chunfang; Xiaoyang Li and Guilin Liu. 2019. "Political Uncertainty and Cross-Border Acquisitions." *Review of Finance*, 23(2), 439-70.

Cavallo, Eduardo; Sebastian Galiani; Ilan Noy and Juan Pantano. 2013. "Catastrophic Natural Disasters and Economic Growth." *Review of Economics and Statistics*, 95(5), 1549-61.

Chaieb, Ines and Stefano Mazzotta. 2013. "Unconditional and Conditional Exchange Rate Exposure." *Journal of International Money and Finance*, 32, 781-808.

Cheung, Yan-Leung; P Raghavendra Rau and Aris Stouraitis. 2006. "Tunneling, Propping, and Expropriation: Evidence from Connected Party Transactions in Hong Kong." *Journal of Financial Economics*, 82(2), 343-86.

Choi, Jongmoo Jay and Cao Jiang. 2009. "Does Multinationality Matter? Implications of Operational Hedging for the Exchange Risk Exposure." *Journal of Banking & Finance*, 33(11), 1973-82.

Choi, Sangyup; Davide Furceri and Chansik Yoon. 2021. "Policy Uncertainty and Foreign Direct Investment." *Review of International Economics*, 29(2), 195-227.

Chowdhry, Bhagwan and Jonathan TB Howe. 1999. "Corporate Risk Management for Multinational Corporations: Financial and Operational Hedging Policies." *Review of Finance*, 2(2), 229-46.

Christiano, Lawrence J; Roberto Motto and Massimo Rostagno. 2014. "Risk

Shocks." *American Economic Review*, 104(1), 27-65.

Claessens, Stijn; Simeon Djankov; Joseph PH Fan and Larry HP Lang. 2002. "Disentangling the Incentive and Entrenchment Effects of Large Shareholdings." *Journal of Finance*, 57(6), 2741-71.

Çolak, Gönül; Art Durnev and Yiming Qian. 2017. "Political Uncertainty and Ipo Activity: Evidence from US Gubernatorial Elections." *Journal of Financial and Quantitative Analysis*, 52(6), 2523-64.

Conyon, Martin J. and Lerong He. 2016. "Executive Compensation and Corporate Fraud in China." *Journal of Business Ethics*, 134(4), 669-91.

Davis, Steven J; Dingquian Liu and Xuguang Simon Sheng. 2019. "Economic Policy Uncertainty in China since 1949: The View from Mainland Newspapers." Working Paper at the U.S. Library of Congress.

Devereux, Michael B. and James Yetman. 2010. "Price Adjustment and Exchange Rate Pass-Through." *Journal of International Money and Finance*, 29(1), 181-200.

Dominguez, Kathryn M. E. and Linda L. Tesar. 2006. "Exchange Rate Exposure." *Journal of International Economics*, 68(1), 188-218.

Duchin, Ran and Breno Schmidt. 2013. "Riding the Merger Wave: Uncertainty, Reduced Monitoring, and Bad Acquisitions." *Journal of Financial Economics*, 107(1), 69-88.

Dufey, Gunter. 1972. "Corporate Finance and Exchange Rate Variations." *Financial Management*, 1(2), 51-57.

Dumas, Bernard. 1978. "The Theory of the Trading Firm Revisited." *Journal of Finance*, 33(3), 1019-30.

Ehlers, Torsten and Frank Packer. 2013. "Fx and Derivatives Markets in Emerging Economies and the Internationalisation of Their Currencies." BIS Quarterly Review, December.

Entrop, Oliver and Fabian U Fuchs. 2019. "Foreign Exchange Rate Exposure of Companies under Dynamic Regret." University of Passau, Working Paper.

Farooq, Omar and Neveen Ahmed. 2019. "Dividend Policy and Political Uncertainty: Evidence from the Us Presidential Elections." *Research in International*

Business and Finance, 48, 201-09.

Francis, Bill B; Iftekhar Hasan and Yun Zhu. 2014. "Political Uncertainty and Bank Loan Contracting." *Journal of Empirical Finance*, 29, 281-86.

Froot, Kenneth A.; David S. Scharfstein and Jeremy C. Stein. 1993. "Risk Management: Coordinating Corporate Investment and Financing Policies." *Journal of Finance*, 48(5), 1629-58.

Gasper, John T and Andrew Reeves. 2011. "Make It Rain? Retrospection and the Attentive Electorate in the Context of Natural Disasters." *American Journal of Political Science*, 55(2), 340-55.

Géczy, Christopher; Bernadette A. Minton and Catherine Schrand. 1997. "Why Firms Use Currency Derivatives." *Journal of Finance*, 52(4), 1323-54.

Geller, Robert J; David D Jackson; Yan Y Kagan and Francesco Mulargia. 1997. "Earthquakes Cannot Be Predicted." *Science*, 275(5306), 1616-16.

Gilchrist, Simon; Jae W Sim and Egon Zakrajšek. 2014. "Uncertainty, Financial Frictions, and Investment Dynamics," NBER Working Paper, No.20038.

Griffin, John M and René M Stulz. 2001. "International Competition and Exchange Rate Shocks: A Cross-Country Industry Analysis of Stock Returns." *Review of Financial Studies*, 14(1), 215-41.

Guay, Wayne and S. P. Kothari. 2003. "How Much Do Firms Hedge with Derivatives?" *Journal of Financial Economics*, 70(3), 423-61.

Guceri, Irem and Maciej Albinowski. 2021. "Investment Responses to Tax Policy under Uncertainty." *Journal of Financial Economics*, 141(3), 1147-70.

Gulen, Huseyin and Mihai Ion. 2016. "Policy Uncertainty and Corporate Investment." *Review of Financial Studies*, 29(3), 523-64.

Han, Seungjin and Jiaping Qiu. 2007. "Corporate Precautionary Cash Holdings." *Journal of Corporate Finance*, 13(1), 43-57.

He, Jia and Lilian K. Ng. 1998. "The Foreign Exchange Exposure of Japanese Multinational Corporations." *Journal of Finance*, 53(2), 733-53.

He, Qing; Bingqian Cheng and Jing Wen. 2019. "Does Aggregate Insider Trading Predict Stock Returns in China?" *International Journal of Finance & Economics*, 24(2),

922-42.

He, Qing; Dongxu Li and Erzhuo Liu. 2022. "The Impact of Political Connections on Firms' Exchange Rate Exposure: Evidence from China." Available at SSRN: https://ssrn.com/abstract=4283536.

He, Qing; Junyi Liu; Sizhu Wang and Jishuang Yu. 2020. "The Impact of Covid-19 on Stock Markets." *Economic and Political Studies*, 8(3), 275-88.

He, Qing; Junyi Liu and Ce Zhang. 2021a. "Exchange Rate Exposure and International Competition: Evidence from Chinese Industries." *Journal of Contemporary China*, 30(131), 820-40.

____. 2021b. "Exchange Rate Exposure and Its Determinants in China." China Economic Review, 65, 101579.

He, Qing and Oliver M Rui. 2016. "Ownership Structure and Insider Trading: Evidence from China." *Journal of Business Ethics*, 134(4), 553-74.

Hekman, Christine R. 1985. "A Financial Model of Foreign Exchange Exposure." *Journal of International Business Studies*, 16(2), 83-99.

Hoberg, Gerard and S. Katie Moon. 2017. "Offshore Activities and Financial Vs Operational Hedging." *Journal of Financial Economics*, 125(2), 217-44.

Hodder, James E. 1982. "Exposure to Exchange-Rate Movements." *Journal of International Economics*, 13(3), 375-86.

Holm, Hakan J; Sonja Opper and Victor Nee. 2013. "Entrepreneurs under Uncertainty: An Economic Experiment in China." *Management Science*, 59(7), 1671-87.

Huang, Pinghsun; Hsin-Yi Huang and Yan Zhang. 2019. "Do Firms Hedge with Foreign Currency Derivatives for Employees?" *Journal of Financial Economics*, 133(2), 418-40.

Huang, Yun and Paul Luk. 2020. "Measuring Economic Policy Uncertainty in China." *China Economic Review*, 59, 101367.

Hutson, Elaine and Elaine Laing. 2014. "Foreign Exchange Exposure and Multinationality." *Journal of Banking & Finance*, 43, 97-113.

Hutson, Elaine and Simon Stevenson. 2010. "Openness, Hedging Incentives and

Foreign Exchange Exposure: A Firm-Level Multi-Country Study." *Journal of International Business Studies*, 41(1), 105-22.

Jian, Ming and T. J. Wong. 2010. "Propping through Related Party Transactions." *Review of Accounting Studies*, 15(1), 70-105.

Jiang, Guohua; Charles MC Lee and Heng Yue. 2010. "Tunneling through Intercorporate Loans: The China Experience." *Journal of Financial Economics*, 98(1), 1-20.

Jorion, Philippe. 1990. "The Exchange-Rate Exposure of Us Multinationals." *Journal of Business*, 331-45.

Julio, Brandon and Youngsuk Yook. 2016. "Policy Uncertainty, Irreversibility, and Cross-Border Flows of Capital." *Journal of International Economics*, 103, 13-26.

____. 2012. "Political Uncertainty and Corporate Investment Cycles." *Journal of Finance*, 67(1), 45-83.

Kaviani, Mahsa S; Lawrence Kryzanowski; Hosein Maleki and Pavel Savor. 2020. "Policy Uncertainty and Corporate Credit Spreads." *Journal of Financial Economics*, 138(3), 838-65.

Kim, Young Sang; Ike Mathur and Jouahn Nam. 2006. "Is Operational Hedging a Substitute for or a Complement to Financial Hedging?" *Journal of Corporate Finance*, 12(4), 834-53.

Lien, Donald; Yuchen Sun and Chengsi Zhang. 2021. "Uncertainty, Confidence, and Monetary Policy in China." *International Review of Economics & Finance*, 76, 1347-58.

Mueller, Philippe; Alireza Tahbaz-Salehi and Andrea Vedolin. 2017. "Exchange Rates and Monetary Policy Uncertainty." *Journal of Finance*, 72(3), 1213-52.

Muller, Aline and Willem FC Verschoor. 2006. "Foreign Exchange Risk Exposure: Survey and Suggestions." *Journal of Multinational Financial Management*, 16(4), 385-410.

Nance, Deana R.; Clifford W. Smith Jr and Charles W. Smithson. 1993. "On the Determinants of Corporate Hedging." *Journal of Finance*, 48(1), 267-84.

Nguyen, Quang; Trang Kim and Marina Papanastassiou. 2018. "Policy Uncertainty, Derivatives Use, and Firm-Level FDI." *Journal of International Business Studies*, 49(1), 96-126.

Nordhaus, William D. 2012. "Economic Policy in the Face of Severe Tail Events." *Journal of Public Economic Theory*, 14(2), 197-219.

Ongsakul, Viput; Sirimon Treepongkaruna; Pornsit Jiraporn and Ali Uyar. 2021. "Do Firms Adjust Corporate Governance in Response to Economic Policy Uncertainty? Evidence from Board Size." *Finance Research Letters*, 39, 101613.

Pantzalis, Christos; Betty J Simkins and Paul A Laux. 2001. "Operational Hedges and the Foreign Exchange Exposure of Us Multinational Corporations." *Journal of International Business Studies*, 32(4), 793-812.

Petersen, Mitchell A. 2009. "Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches." *Review of Financial Studies*, 22(1), 435-80.

Quarantelli, Enrico L and Russell R Dynes. 1977. "Response to Social Crisis and Disaster." *Annual Review of Sociology*, 3(1), 23-49.

Roulstone, Darren T. 2003. "The Relation between Insider-Trading Restrictions and Executive Compensation." *Journal of Accounting Research*, 41(3), 525-51.

Salomao, Juliana and Liliana Varela. 2022. "Exchange Rate Exposure and Firm Dynamics." *Review of Economic Studies*, 89(1), 481-514.

Shapiro, Alan C. 1975. "Exchange Rate Changes, Inflation, and the Value of the Multinational Corporation." *Journal of Finance*, 30(2), 485-502.

Shleifer, Andrei and Robert W Vishny. 1997. "A Survey of Corporate Governance." *Journal of Finance*, 52(2), 737-83.

Smith, Clifford W and Rene M Stulz. 1985. "The Determinants of Firms' Hedging Policies." *Journal of Financial and Quantitative Analysis*, 20(4), 391-405.

Wei, Kelsey D. and Laura T. Starks. 2013. "Foreign Exchange Exposure Elasticity and Financial Distress." *Financial Management*, 42(4), 709-35.

Williamson, Rohan. 2001. "Exchange Rate Exposure and Competition: Evidence from the Automotive Industry." *Journal of Financial Economics*, 59(3), 441-75.

Yang, Guangbin. 2022. "The Communist Party of China and the Chinese Road to

Modernisation." *Economic and Political Studies*, 10(1), 1-8.

Zhao, Hao; Scott E Seibert and G Thomas Lumpkin. 2010. "The Relationship of Personality to Entrepreneurial Intentions and Performance: A Meta-Analytic Review." *Journal of Management*, 36(2), 381-404.

Figure 1 Average Exchange Rate Exposure and Economic Policy Uncertainty Index

Note: This figure shows the time trend of economic policy uncertainty (left axis) and the average exchange rate exposure (right axis), where economic policy uncertainty is the original value without logarithm transformation.

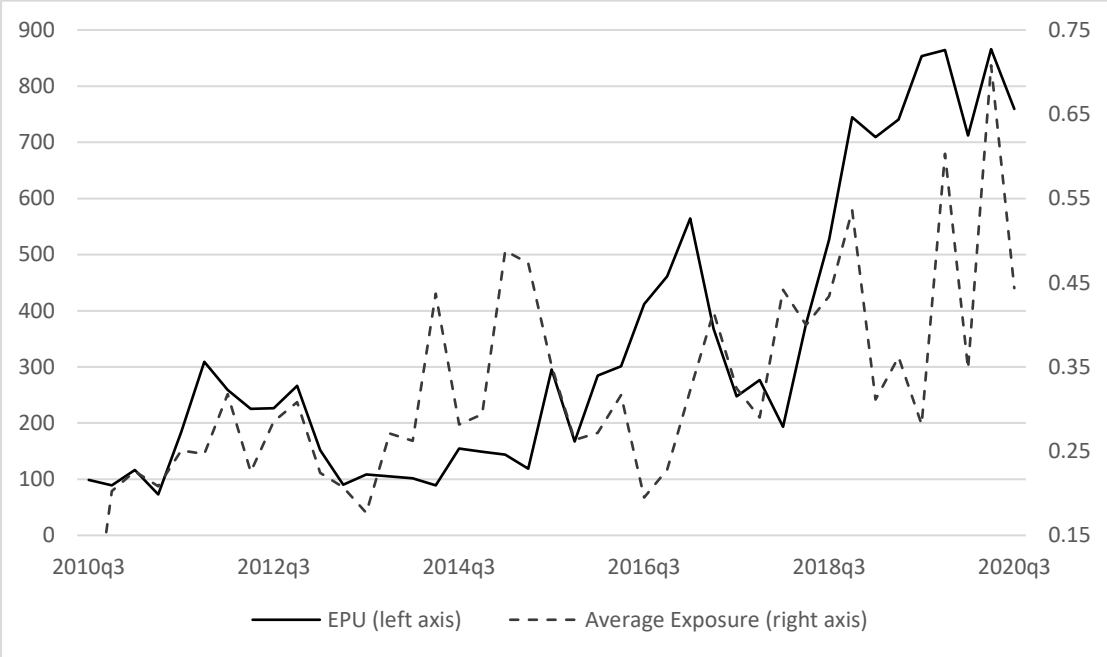

Figure 2 Response of Exposure to an Economic Policy Uncertainty Shock

Note: The average exposure IRF (impulse response function) is estimated from VAR(1) model in the following ordering system: the natural logarithm of economic policy uncertainty index from Baker et al. (2016), inflation rate (CPI), interest spread between China and US (IntSpread), the ratio of fixed asset investment to GDP (FGDP), foreign currency bank loan growth rate (Exloan), growth rate of RMB real effective exchange rate index (REER) and average level of exchange rate exposure. The solid line represents the orthogonalized impulse response of exposure to an economic policy uncertainty shock and the dash lines represent the upper and lower boundary of the 90% confidence interval respectively. The eigenvalues of VAR(1) model are all located inside the unit circle, implying that VAR(1) model has passed the stationarity condition test. Granger causality test shows that the economic policy uncertainty is statistically significant at the level of 5% (P=0.0488) in the equation of the average exposure, implying that economic policy uncertainty is the Granger cause of exchange rate risk exposure.

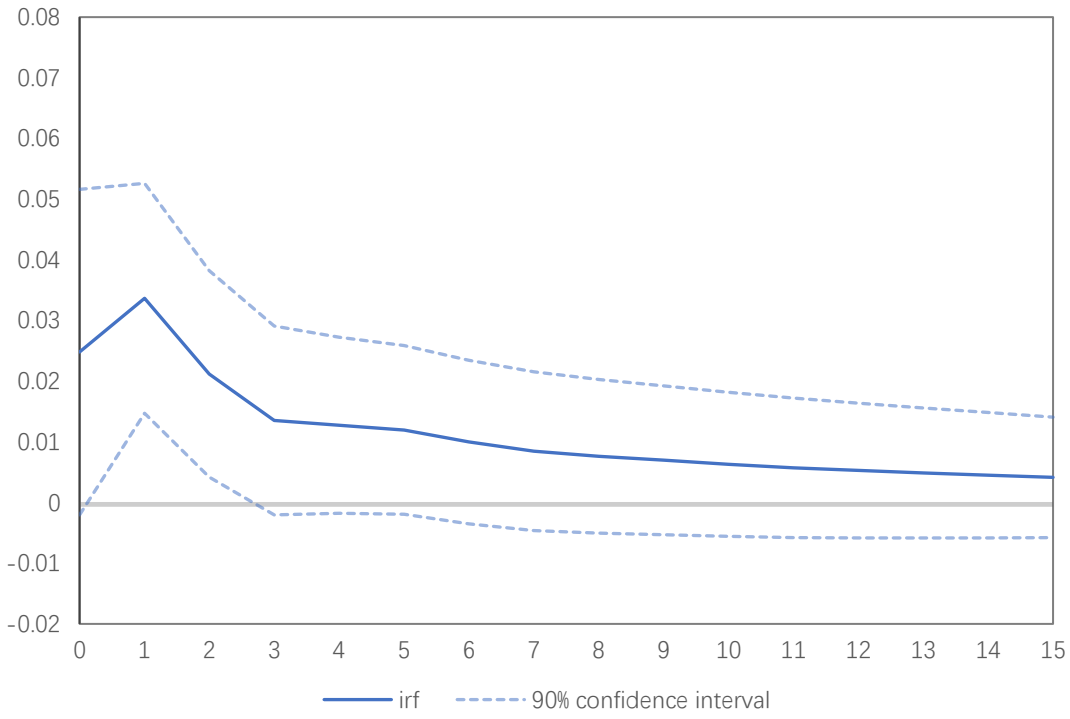

Table 1 Summary Statistics

Note: This table reports summary statistics for the main variables used in our analysis. The data are from the 3rd quarter of 2010 to the 3rd quarter of 2020. Economic Policy Uncertainty Index data are quarterly time series. Firm-level Exchange Rate Exposure data are quarterly panel data. Firm control variables data are yearly panel data, which are originated from the annual financial statements of the previous year. Macro control variables are quarterly data.

Variable	Observation	Mean	Std. Dev..	25th percentile	Median	75th percentile
Economic Policy Uncertainty Index						
EPU	41	5.543	0.758	4.970	5.557	6.134
EPU_R	41	0.000	0.259	-0.212	0.009	0.195
EPU_ML	41	5.046	0.517	4.636	4.870	5.402
EPU_H&L	41	4.951	0.142	4.841	4.957	5.034
EPU_fsc	41	4.875	0.334	4.670	4.866	5.026
EPU_mn	41	4.818	0.379	4.521	4.849	4.989
EPU_ec	41	4.735	0.537	4.300	4.814	5.091
EPU_trd	41	4.974	0.641	4.551	4.812	5.242
Firm-level Exchange Rate Exposure						
Exposure	101008	0.264	0.288	0.091	0.198	0.362
Firm Control Variables						
size	27834	3.627	1.309	2.675	3.452	4.379
leverage	27827	0.427	0.214	0.254	0.417	0.588
quick	27828	2.060	2.637	0.712	1.197	2.183
BM	26868	0.936	0.983	0.350	0.607	1.110
floan	27835	0.032	0.115	0.000	0.000	0.000
oversea	27835	0.123	0.205	0.000	0.010	0.159
Macro Control Variables						
CPI	41	2.634	1.191	2.000	2.300	2.900
IntSpread	41	2.371	0.777	1.842	2.321	2.987
FGDP	41	0.524	0.133	0.417	0.537	0.642
Exloan	41	0.020	0.042	-0.013	0.017	0.053
REER	41	0.005	0.022	-0.004	0.003	0.019

Table 2 Descriptive Statistics for Exposure in High and Low EPU Categories

Note: This table reports descriptive statistics for exposure separately for periods of high and low economic policy uncertainty (EPU) based on the time-series median. The student t test and the Wilcoxon-Mann-Whitney U-test are used to examine the significance of the differences in the means and medians of exposure between the two groups defined by EPU respectively. *, **, and *** indicate significance at the 0.1, 0.05 and 0.01 levels respectively.

	Observations	Mean	Median
High EPU	59524	0.281	0.209
Low EPU	41484	0.240	0.183
Difference (High-Low)		0.041	0.026
Diff(t-stat/z-stat)		23.871***	21.284***

Table 3 Baseline Results: EPU and Exposure

Note: This table reports the baseline results of fixed-effect regressions where the dependent variable is Exposure. A detailed description of the variables is given in Appendix A. The sample period is from the 3rd quarter of 2010 to the 3rd quarter of 2020. t-statistics are clustered at the firm level. t-statistics appear in parentheses below coefficient estimates. *, **, and *** indicate significance at the 0.1, 0.05 and 0.01 levels respectively.

Dependent Variable: Exposure				
	(1)	(2)	(3)	(4)
EPU	0.023***	0.024***	0.024***	0.028***
	(14.52)	(10.40)	(10.24)	(11.35)
size		0.002	0.003	0.004
		(0.47)	(0.45)	(0.68)
leverage		0.008	0.008	0.012
		(0.50)	(0.50)	(0.69)
quick		-0.006***	-0.006***	-0.006***
		(-7.87)	(-7.86)	(-7.69)
BM		0.013***	0.013***	0.008**
		(3.61)	(3.59)	(2.16)
floan		0.013	0.013	0.015
		(1.02)	(1.03)	(1.17)
oversea		-0.019	-0.019	-0.019
		(-0.83)	(-0.84)	(-0.81)
CPI				-0.005***
				(-5.17)
IntSpread				0.006***
				(3.05)
FGDP				-0.081**
				(-2.55)
Exloan				-0.031
				(-0.86)
REER				0.388***
				(7.79)
Constant	0.129***	0.109***	0.110***	0.122***
	(14.01)	(7.58)	(7.61)	(6.52)
Firm FE	Yes	Yes	Yes	Yes
Quarter FE	No	No	Yes	Yes
No. firms	3616	3430	3430	3430
Observations	100836	94491	94491	94491
Adj-R^2	0.101	0.088	0.089	0.089

Table 4 Hedging Effects

Note: Panel A reports the effects of hedging on the nexus of EPU and exchange rate risk exposure in the whole period. Column (1) and (2) report the interaction of EPU and *drvtv*. Column (3) and (4) report the interaction of EPU and *brdth*, where the *brdth* dummy equals to one if the number of continents where a firm has subsidiaries is greater than 3, and zero otherwise. Panel B reports the regression results in two scenarios with high exchange rate volatility: the 811 reform and Covid-19 pandemic. Column (1)-(3) report the regression results in the year after "811 reform" i.e. from the 3rd quarter of 2015 to the 2nd quarter of 2016. Column (4)-(6) report the regression results in the year after the outbreak of Covid-19 pandemic i.e. from the 4th quarter of 2019 to the 3rd quarter of 2020. More specifically, column (1) reports the benchmark regression result. To test the role of hedging, Column (2) reports the interaction of EPU and *drvtv*. Column (3) reports the interaction of EPU and *brdth.* The similar arrangements are applied on column (4)-(6).

Panel A: Hedging Effects				
Dependent Variable: Exposure	Financial hedging		Operational Hedging	
	(1)	(2)	(3)	(4)
EPU	0.024***	0.028***	0.025***	0.030***
	(10.27)	(11.40)	(10.25)	(11.22)
EPU×drvtv	-0.009	-0.011		
	(-0.48)	(-0.55)		
drvtv	0.049	0.057		
	(0.41)	(0.48)		
EPU× brdth			-0.014**	-0.017***
			(-2.50)	(-2.91)
brdth			0.064**	0.079***
			(2.13)	(2.59)
Firm Control	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes
Macro Control	No	Yes	No	Yes
No. firms	3430	3430	3430	3430
Observations	94491	94491	94491	94491
Adj-R^2	0.088	0.089	0.089	0.090

Panel B: Heightened Exchange Rate Volatility						
Dependent Variable: Exposure	the year after "811 Reform" 2015Q3-2016Q2			the year after the break of Covid-19 Pandemic 2019Q4-2020Q3		
	Baseline	Conditioning on Hedging Activities or Operational Hedging		Baseline	Conditioning on Hedging Activities or Operational Hedging	
	(1)	(2)	(3)	(4)	(5)	(6)
EPU	0.200***	0.199***	0.201***	0.302***	0.302***	0.305***
	(5.56)	(5.54)	(5.41)	(7.14)	(7.12)	(7.18)
EPU×drvtv		0.052			0.015	
		(0.98)			(0.14)	
drvtv		-0.205			-0.203	
		(-0.76)			(-0.29)	
EPU×brdth			-0.020			-0.055
			(-0.83)			(-1.01)
brdth			0.116			0.311
			(0.86)			(0.86)
Firm Control	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	No	No	No	No	No
Macro Control	Yes	Yes	Yes	Yes	Yes	Yes
No. firms	2195	2195	2195	3426	3426	3426
Observations	7889	7889	7889	13516	13516	13516
Adj-R^2	0.154	0.154	0.154	0.363	0.363	0.363

Table 5 Robustness

Note: This table reports the results of robustness tests. Panel A reports the regression results of alternative specification. In column (1), the currency basket refers to CFETS RMB exchange rate index with yearly changing weights. In column (2) and (3), the currency basket is classified into advanced economy currency and emerging economy currency respectively. In column (4), we move the rolling window for computing exposure two quarter forward further. Column (5) shows the result of the weighted least squares regression by weighting each sample as the inverse of its standard error in the coefficient estimation process through Equation (2). In column (6), the independent variable is the square root of exposure. Column (7) uses the system GMM method of Blundell and Bond (1998) to estimate our result in a dynamic panel, where the quarter and industry fixed effects are controlled. In column (9), t-statistics are clustered at the firm and year-quarter level. Panel B reports the regression results of alternative uncertainty measure, with more macroeconomic variables controlled in the model.

Panel A: Alternative Specification								
Dependent Variable: Exposure	CFETS Currency	Advanced Economy Currency	Emerging Economy Currency	Two Quarter Forward	WLS	Square Root	System GMM	Double Cluster
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EPU	0.026***	0.027***	0.009***	0.216***	0.016***	0.014***	0.028***	0.028**
	(8.57)	(10.82)	(3.05)	(10.80)	(10.52)	(11.35)	(11.24)	(2.05)
L. exposure							0.379***	
							(4.79)	
Firm Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. firms	3430	3430	3430	3242	3430	3430	3430	3430
Observations	94491	94491	94491	86773	94491	94491	91294	94491
Adj-R^2	0.097	0.088	0.150	0.129	0.115	0.089		0.089

Panel B: Alternative Uncertainty Measure							
Dependent Variable: Exposure							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
EPU	0.026***						
	(8.37)						
EPU_ML		0.042***					
		(9.87)					
EPU_H&L			0.069***				
			(5.68)				
EPU_fsc				0.015***			
				(4.02)			
EPU_mn					0.017***		
					(3.55)		
EPU_ec						-0.001	
						(-0.02)	
EPU_trd							0.026***
							(10.47)
More Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. firms	3430	3430	3430	3430	3430	3430	3430
Observations	92018	92018	92018	92018	92018	92018	92018
Adj-R^2	0.151	0.118	0.118	0.118	0.118	0.151	0.119

Table 6 Endogeneity

Note: Column (1) and (2) report the results of fixed-effect regressions of Exposure on the residuals of EPU on EPU_foreign and a series of macro variables which are consistent with baseline regression. Column (3)-(5) report the results of two stage least square, with the number of geological disasters (unit: 10,000) as instrumental variable. Taking the column (4) as an example, Cragg-Donald Wald F statistic is 43063.03 and Kleibergen-Paap Wald rk F statistic is 34.21. The two statistics are both larger than the Stock-Yogo weak ID test 10% critical values 16.38. t-statistics appear in parentheses below coefficient estimates. *, **, and *** indicate significance at the 0.1, 0.05 and 0.01 levels respectively.

Second Stage Dependent Variable: Exposure					
	(1)	(2)	(3)	(4)	(5)
EPU			0.094***	0.099***	
			(3.87)	(3.20)	
EPU_R	0.072***	0.083***			0.271***
	(26.98)	(27.01)			(3.15)
Firm Control	No	Yes	Yes	Yes	Yes
Macro Control	No	No	No	Yes	No
Firm FE	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes
Double Cluster	No	No	Yes	Yes	Yes
No. firms	3616	3430	3430	3430	3430
Observations	100836	94491	94491	94491	94491
First Stage Dependent Variable:			EPU	EPU	EPU_R
Disaster			-0.576***	-0.760***	-0.199***
			(-4.93)	(-5.85)	(-3.68)
F value			24.33***	34.21***	13.55***
Adj-R^2			0.482	0.679	0.454

Table 7 International Operation

Note: Column (1) and (2) report the interaction of EPU and overseas operation. Column (3) and (4) report the interaction of EPU and market competition. Column (5) and (6) report the interaction of EPU and foreign currency loan.

Dependent Variable: Exposure	Foreign Sales Ratio		Market Competition		Foreign Currency Loan	
	(1)	(2)	(3)	(4)	(5)	(6)
EPU	0.017***	0.022***	0.021***	0.026***	0.022***	0.027***
	(7.12)	(8.88)	(8.55)	(9.73)	(8.91)	(10.30)
EPU×oversea	0.017***	0.017***				
	(5.90)	(5.90)				
EPU×cmpt			0.009**	0.009**		
			(2.34)	(2.28)		
EPU×floan					0.002**	0.002**
					(1.99)	(2.12)
oversea	-0.081***	-0.081***				
	(-3.47)	(-3.35)				
floan					0.000	0.001
					(0.02)	(0.09)
Firm Control	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Macro Control	No	Yes	No	Yes	No	Yes
No. firms	3430	3430	3430	3430	3430	3430
Observations	94491	94491	94491	94491	94491	94491
Adj-R^2			0.089	0.090	0.089	0.090

Table 8 Rent seeking

Panel A reports descriptive statistics for Harmful RPT, Other Receivables and Executive Compensation separately for periods of high and low economic policy uncertainty (EPU) based on the time-series median. The student t test and the Wilcoxon-Mann-Whitney U-test are used to examine the significance of the differences in the means and medians of these indicators between the two groups defined by EPU respectively. *, **, and *** indicate significance at the 0.1, 0.05 and 0.01 levels respectively. All the variables are winsorized at the level of 5% and 95%. Panel B shows the impact of corporate governance on the nexus of EPU and exposure. Column (1)-(2) report the interaction of EPU and *sprt*, where *sprt* dummy equals to 1 if the ratio of ownership to control rights of corporate actual controller is not 1, and equals to 0 otherwise. Column (3) and (4) report the interaction of EPU and *dual*, where *dual* dummy equals to 1 if general manager is also given the job of chairman, and equals to 0 otherwise. Column (5) and (6) report the interaction of EPU and *trnsp*, where *trnsp* dummy equals to 1 if the rating of corporate transparence is "A" as Shenzhen and Shanghai Stock Exchange disclosure, and equals to 0 otherwise. Column (7) and (8) report the interaction of EPU and *instown*, where *instown* is the proportion of institutional investors shareholding. Column (9) and (10) report the interaction of EPU and *analyst*, where *analyst* is the number of analyst teams following the firm within the current year with the missing value replaced by 0.

Panel A: Tunneling in High vs Low EPU Period							
Variable		High EPU		Low EPU		Diff	Diff (t-stat/z-stat)
		Obs	Value	Obs	Value	(High-Low)	
Harmful RPT	Mean	26467	0.310	15316	0.258	0.053	11.652***
	Median		0.064		0.042	0.022	11.481***
Other	Mean	59655	0.031	43454	0.030	0.001	5.342***
Receivables	Median		0.014		0.014	0.000	1.942*
Executive	Mean	46778	0.235	35067	0.226	0.009	5.475***
Compensation	Median		0.149		0.141	0.008	6.536***

Panel B: Conditioning on Corporate Governance Proxies					
Dependent Variable: Exposure	Separation of Ownership and Control	Duality of General Manager and Board Chairman	Corporate Transparence	Shareholding of Institutional Investor	Analyst Coverage
	(1)	(2)	(3)	(4)	(5)
EPU	0.022***	0.026***	0.029***	0.043***	0.034***
	(8.18)	(10.27)	(11.27)	(9.96)	(12.86)
EPU×sprt	0.004***				
	(4.35)				
EPU×dual		0.009**			
		(2.08)			
EPU×trnsp			-0.008*		
			(-1.67)		
EPU×instown				-0.033***	
				(-4.85)	
EPU×analyst					-0.001***
					(-5.48)
sprt	-0.012*				
	(-1.81)				
dual		-0.053**			
		(-2.31)			
trnsp			0.042		0.041
			(1.59)		(1.56)
instown				0.170***	
				(3.96)	
analyst					0.004***
					(4.77)
Firm Control	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Quarter FE	Yes	Yes	Yes	Yes	Yes
Macro Control	Yes	Yes	Yes	Yes	Yes
No. firms	3430	3430	3430	3430	3430
Observations	94491	94491	94491	94386	94491
Adj-R^2	0.090	0.090	0.089	0.090	0.090

Table 9 Risk Management

Note: Table 10 reports the impact of economic policy uncertainty on derivatives usage and operational hedging of firms. Column (1)-(3) represent the results of logit model, where the dependent variable is *drvtv*. Column (4)-(6) represent the result of logit model, where the dependent variable is *brdth* dummy. The *brdth* dummy equals to one if the number of continents where a firm has subsidiaries is greater than 3, and zero otherwise. In order to uniform the data frequency, EPU is adjusted as annual averages here.

Dependent Variable:	Financial hedging			Operational Hedging		
	(1)	(2)	(3)	(4)	(5)	(6)
EPU_Y	0.785***	0.715***	0.604***	-0.323***	-0.337***	-0.104**
	(5.91)	(5.04)	(3.08)	(-7.70)	(-7.85)	(-2.24)
size		0.221**	0.224**		0.111*	0.117*
		(2.52)	(2.55)		(1.83)	(1.90)
leverage		0.161	0.141		1.125***	0.880***
		(0.18)	(0.16)		(3.69)	(2.77)
quick		-0.073	-0.073		0.106***	0.093***
		(-1.25)	(-1.25)		(7.05)	(5.96)
BM		-0.203*	-0.206*		-0.031	0.018
		(-1.72)	(-1.73)		(-0.51)	(0.30)
floan		0.553	0.553		1.509***	1.702***
		(0.96)	(0.96)		(6.43)	(7.13)
oversea		2.645***	2.646***		0.875***	0.854***
		(8.45)	(8.47)		(4.33)	(4.15)
crslist		0.295	0.291		-0.039	-0.099
		(0.64)	(0.62)		(-0.18)	(-0.44)
PERGDP			-1.478			8.966***
			(-0.46)			(13.15)
VIX			0.007			0.052***
			(0.41)			(13.37)
Industry FE	No	Yes	Yes	Yes	Yes	Yes
No. firms	3502	3075	3075	3500	3430	3430
Observations	25917	21894	21894	25900	25395	25395
Pseudo R^2	0.023	0.100	0.100	0.012	0.039	0.059

Appendix Variables Definition

Variable	Variable Description	Data Source
	Economic Policy Uncertainty Index	
EPU	logarithm of quarterly BBD index based on South China Morning Post	BBD economic policy uncertainty index official website[17]
EPU_R	residual EPU	
EPU_ML	China mainland EPU index constructed by Davis et al. (2019) based on the Renmin Daily and the Guangming Daily	
EPU_Y	yearly average of EPU	
EPU_H&L	China EPU index constructed by Huang and Luk (2020) based on 10 Chinese mainland leading newspapers	
EPU_fsc	fiscal policy uncertainty index	Chinese economic policy uncertainty index official website [18]
EPU_mn	monetary policy uncertainty index	
EPU_ec	exchange rate and capital account policy uncertainty index	
EPU_trd	trade policy uncertainty index	
	Exposure of firms to exchange rate risk	
exposure	the sensitivity of a firm stock return to the change of SDR currency exchange rate controlling for market return estimated by equation (1)	Bloomberg database (exchange rate data); CSMAR and Wind database (stock data)
	Firm Control Variables	
size	firm's size measured by the logarithm of firm's total assets (units: 100 million yuan) in the end of previous year	CSMAR database
leverage	firm's leverage measured by the debt-to-asset ratio in the end of previous year	CSMAR database
quick	firm's quick ratio measured by the ratio of current assets minus inventory over current liabilities in the end of previous year	CSMAR database
BM	firm's book-to-market value of equity measured by the ratio of total value of assets over market value in the end of previous year	Wind database
floan	firm's foreign loans proportion measured by the ratio of foreign currency loans over total loans in the end of previous year	Wind database
oversea	firm's foreign sales proportion measured by the ratio of overseas revenue over operating income in the end of previous year	Wind database

[17] http://www.policyuncertainty.com/china_epu.html

[18] https://economicpolicyuncertaintyinchina.weebly.com

industry	industry code according to CSRC industry classification in 2012	CSMAR database
Macro Control Variables		
CPI	Consumer Price Index (CPI) quarterly average growth rate (%)	RESSET database
IntSpread	interest spread between China and US measured by the difference between the yield to China Bond 5 Year CDB Bond and US Treasuries	Wind database
FGDP	the ratio of fixed asset investment to GDP	Wind database
Exloan	foreign currency bank loan growth rate	Wind database
REER	growth rate of RMB real effective exchange rate index	Wind database
More Macro Factors		
EPU_foreign	a principal component factor with the largest eigenvalue extracted from the logarithm of the seven EPU index of foreign countries, including USA, UK, Japan, EU, India, South Korea and Russia	BBD economic policy uncertainty index official website[19]
GDP	GDP growth rate	CSMAR and Wind database
IndValue	industrial added value growth rate	
Imprt	import volume growth rate	
Exprt	export volume growth rate	
FrgRsv	logarithm of foreign exchange reserve	
FscRvn	fiscal revenue growth rate	
FscExp	fiscal expenditure growth rate	
M2	M2 growth rate	
RetSale	total retail sales of social consumer goods growth rate	
FixInv	fixed assets investment growth rate	
Intrst	one-year deposit interest rate	
PPI	producer price index growth rate	
USDCNY	exchange rate of USD to CNY	
Instrumental Variables		
Disaster	the number of geological disasters (unit: 10,000)	China Statistical Yearbook
Other Variables		
drvtv	the dummy variable drvtv equals one if a firm report the usage of currency derivative, and zero otherwise	CSMAR database
brdth	the dummy variable brdth equals one if the number of continents where a firm has subsidiaries is greater than 3, and zero otherwise.	Wind database

[19] http://www.policyuncertainty.com/china_epu.html

cmpt	the dummy variable cmpt equals one if foreign industry return has significant (at 10% level) negative effect on China's industry return in the same industry, and otherwise zero.	CSMAR database
Harmful RPT	the ratio of the aggregate amounts of related-party transactions within the current year which is regarded as harmful over the total sales in the previous year	Wind database
Other Receivables	the net amounts of other receivables in the current year scaled by the total sales in the previous year	Wind database
Executive Compensation	the percentage of total executive compensation to the total sales.	Wind database
sprt	the dummy variable sprt equals 1 if the ratio of ownership to control rights of corporate actual controller is not 1, and equals to 0 otherwise.	CSMAR database
dual	the dummy variable dual equals 1 if general manager is also given the job of chairman, and equals to 0 otherwise.	CSMAR database
trnsp	the dummy variable trnsp equals 1 if the rating of corporate transparence is "A" as Shenzhen and Shanghai Stock Exchange disclosure, and equals to 0 otherwise	CSMAR database
instown	the dummy variable instown is the proportion of institutional investors shareholding.	Wind database
analyst	the dummy variable analyst is the number of analyst teams following the firm within the current year with the missing value replaced by 0.	CSMAR database
crslist	The dummy variable crslist equals 1 if ABH share cross-listed code is not null, and equals to 0 otherwise	CSMAR database
PERGDP	annual growth rate of per capita GDP	CSMAR database
VIX	the annual S&P 500 Volatility Index, (the Fear Index)	CSMAR database