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Political uncertainty and a firm's credit risk: Evidence from the international CDS market

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ABSTRACT

Using a large sample of firms with single-name credit default swap (CDS) contracts in 30 countries, we document the evidence that political uncertainty, proxied by national election dummy, is positively related to firm-level credit risk. Specifically, this positive relation is more pronounced for the firms that have no political connection or poor international diversification, and in the countries with higher political uncertainty and lower investor protections. Further, by using a difference-in-differences approach, we find evidence to support idiosyncratic volatility and debt rollover channels through which political uncertainty affects the credit risk of individual firm.

1. Introduction

The unpredictability of changes in existing policies and laws, such as economic policy, competition laws, and tax acts, known as *political uncertainty*, is considered as a non-economic uncertainty and commands a risk premium, especially under weak economic conditions (Pastor and Veronesi, 2013). As documented in abundant studies, political uncertainty generates significant turbulence in financial markets and affects corporate decisions, which in turn have mixed impacts on individual firm's credit risk. The argument that political uncertainty degrades a firm's credit risk rests on evidence of increasing equity volatility (Bialkowski et al., 2008; Boutchkova et al., 2011; Pastor and Veronesi, 2012) and the amplified costs of corporate debts (Kaviani et al., 2014; Waisman et al., 2015) in the face of high policy risk. However, opponents argue that firms actively adopt hedging strategies to alleviate their exposure to anticipated political risk by deducting capital expenditures (Julio and Yook, 2012), reducing financial leverage (Cao et al., 2013; Han et al., 2015), limiting dividend payouts (Huang et al., 2013), and accumulating cash holdings (Julio and Yook, 2012), which consequently mitigates an increase of (or probably leads to a decrease of) credit risk, especially in short term. These competing arguments call for an empirical study to examine the relationship between political uncertainty and firms-level credit risk.

In this study, we examine the impact of political uncertainty on individual firm's credit risk by using single-name credit default swap (CDS) spreads in 30 countries. Specifically, we employ national elections as a proxy for political uncertainty.[1] Although national elections are not a direct measure of political uncertainty, as shown in literature, political uncertainty is higher on average during election periods.[2] Also, using national elections offers two main advantages: recurrence and exogeneity. *National election year*

[1] National elections have been used in many studies to indicate political uncertainty, such as Bialkowski et al. (2008), Boutchkova et al. (2011), and Julio and Yook (2012).
[2] The same assumption is employed in Boutchkova et al. (2011) and Julio and Yook (2012).

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is defined as the year when elections take place for national leaders holding a country's executive power. For instance, we identify *presidential election year* as the national election year for a country with a presidential system and the *legislative election year* as the national election year for a country with a legislative system. For a country with a hybrid system, we use the election year of the leader whose office holds supreme executive power. To measure individual firms' credit risk, we use CDS spreads. In contrast to corporate bond yield spreads that are affected by many factors other than a firm's default risk (Huang and Huang, 2012; Longstaff et al., 2005), including but not limited to liquidity risk, debt–equity agency risk, and bond contractual provisions, single-name credit default swaps primarily reflect individual firms' default risk and provide an opportune testing ground to study the link between credit risk and political uncertainty.

Using empirical data in 30 countries, we document a significantly positive relation between political uncertainty and individual firm's credit risk in national election years. This positive relation is robust after controlling for potential endogeneity and simultaneity by incorporating possibly omitted macro variables such as financial risk rating, percentage of foreign debt over GDP, exchange rate stability, level of corruption, religion in politics, and government stability. Further, by regressing on 1-year forward CDS spreads, we find that the impact of national elections on firms' credit risk is transitory and starts to vanish after an election year. Additionally, we examine the impact of national elections on the term structure of a credit spread using 1-, 3-, 7- and 10-year CDS contracts and find that the influence of policy risk is more severe for short-run credit risk.

Moreover, we note that the impact of political uncertainty on individual firm's credit risk is heterogeneous across countries and firms. Following La Porta et al. (1998), we use legal origin as a proxy for investor protection across countries. In this vein, we find that the influence of the unpredictability of policy change on firms' credit risk is more pronounced in the countries with poor investor protections. Additionally, we also find that firm's political connection and international diversification alleviate the impact of political uncertainty on CDS spreads.

After establishing the positive impact of political uncertainty on individual firm's credit risk, we also investigate the channels that connect policy risk and individual firms' credit risk by adopting a difference-in-differences analysis. Particularly, we propose two possible channels: equity volatility and debt rollover channels. First, by decomposing the total volatility of equity into systematic and idiosyncratic volatilities using a two-factor model (Morck et al., 2000; Jin and Myers, 2006), we find that political uncertainty amplifies individual firm's credit risk mainly through idiosyncratic volatility channel. Second, we find that the impact of political uncertainty on credit risk is more pronounced for the firms suffering from high rollover risk that is proxied by the ratio of short-term debt due in 1 year to total assets to quantify the rollover risk in national election years.

Our paper contributes to the literature in at least two ways. First, to the best of our knowledge, this is the first study to investigate the impact of political uncertainty on individual firm's credit risk, resolving an ongoing debate and extending the recent stream of research on the economic consequences of political risk. Closely related literature includes studies on stock (Bialkowski et al., 2008; Boutchkova et al., 2011; Pastor and Veronesi, 2012, 2013), corporate bonds (Kaviani et al., 2014; Waisman et al., 2015), municipal bonds (Gao and Qi, 2013), sovereign debt (Cuadra and Sapriza, 2008; Balding, 2011 Mazo, 2013), financial leverage (Cao et al., 2013; Han et al., 2015), dividend payouts (Huang et al., 2013), cash holdings (Julio and Yook, 2012), and option markets (Kelly et al., 2016). Specifically, in contrast to Waisman et al.'s (2015) work, which used corporate yield spreads to reflect credit risk, liquidity risk, and other embedded features, we adopt CDS spreads that primarily and timely reflect corporate credit risk. Moreover, our study is related to the literature examining the impact of national elections on the CDS spread of sovereign debt (Balding, 2011; Mazo, 2013). Since sovereign debt is issued by governments and reflects country-level default risk, the mechanism through which political uncertainty affects the CDS spread of sovereign debt is significantly different from the mechanism for single-name CDS spreads that primarily reflect the credit risk of individual firms. Furthermore, in contrast to Wisniewski and Lambe (2015), who investigated the relationship between the economic policy uncertainty (EPU) index and CDS indices in U.S., we examine the impact of national elections, considered to be a non-economic uncertainty (Pastor and Veronesi, 2012, 2013), on firm-level credit risk in 30 countries. In addition, our study is the first to investigate the mechanism through which political uncertainty affects credit risk by identifying idiosyncratic volatility and debt rollover channels. Accordingly, our findings provide new thoughts on designing hedging strategies to alleviate the impact of political uncertainty on firm-level credit risk.

Second, our study proposes a new non-economic determinant of individual firm's credit risk and enriches the literature on credit risk modeling and CDS pricing. The impact of macroeconomic conditions on credit spread has drawn people's attention since Chen (2010) proposed a theoretical model to explain credit risk premia through macroeconomic conditions. Specifically, Chen (2010) showed that default probabilities and default losses arise endogenously through firm's responses to macroeconomic conditions. However, in this study, we extent this literature by identifying a new macro non-economic determinant of credit risk. In this sense, our study contributes further understanding to the credit risk premia of a firm.

The rest of the paper is organized as follows: Section 2 analyzes the mechanism and constructs testable hypotheses; Section 3 describes data sources and shows the descriptive statistics of our sample; Sections 4 and 5 report and discusses our empirical findings; Section 6 examines the possible channels through which political uncertainty affects firm-level credit risk; and Section 7 concludes the study. Appendix A provides detailed information about the control variables.

2. Hypotheses development

2.1. CDS spreads and corporate bond yield spreads

Firm-level credit risk is affected by the likelihood that issuers fail to honor the promised payment, referred as the *probability of default*, and the expected losses that creditors suffer in the case of default. To hedge risky positions, creditors require a premium to compensate for their exposure to this risk, which provides a measure to quantify credit risk. In traditional studies, people use corporate bond yield spreads, that is, the difference between corporate bond yields and the risk-free rate, to proxy for credit risk. However, in addition to reflecting default risk, the yield spreads of corporate bonds are also affected by liquidity risk, debt–equity agency risk, and bond contractual provisions.

CDS contract is essentially a financial agreement between protection sellers and protection buyers to transfer the credit risk of reference entities. The protection buyers pay periodic premiums to protection sellers. Upon default, the buyers stop paying the premium and claim from sellers the losses given default (LGD) – the difference between the protected value and the recovered value. Compared with the traditional financial markets, such as equity and bond markets, CDS market is relatively new but has grown dramatically in recent decades, especially before the financial crisis starting in late 2007. The CDS market is related to but very differ-

ent from other financial markets in term of its entrance barriers,[3] participants,[4] market structure,[5] and trading system.[6]

In contrast to the yield spread of corporate bonds, CDS spreads have several advantages of reflecting firm-specific credit risk. First, the yield spreads of corporate bonds are affected by factors such as contractual provisions and tax code, which vary significantly across firms, whereas CDS contracts are standardized across firms. Second, the illiquidity of the secondary corporate debt market delays capitalizing new information into the yield spread and, most importantly, significantly amplifies corporate yield spreads (Longstaff et al., 2005). Thus, using corporate yield spread without disentangling the liquidity premium component leads to an upward bias on credit risk. In contrast, the CDS market is much more liquid and efficient in capitalizing on new information and reflecting the market's perception of risk[7] (Norden and Weber, 2007; Forte and Pena, 2009). In this study, we focus on single-name CDS contracts written on the senior unsecured corporate bonds.

2.2. Political uncertainty and credit risk

Political uncertainty refers to the unpredictability of governmental policy or regulatory shifts caused by a possible change in political leader and is one of the key channels through which politics affects the real economy. The uncertainty of governmental policy, named *policy risk* (e.g., Durnev, 2010; Waisman et al., 2015), is particularly acute in election years and has a significant influence on corporate decisions that consequently change firm-level credit risk. However, the channels through which political uncertainty affects a firm's credit risk is unclear, and the direction is controversial. In this section, we will analyze two potential channels and construct corresponding testable hypotheses.

2.2.1. Equity volatility

Pastor and Veronesi (2012) adopted a general equilibrium model to show that uncertainty about government policy increases volatility and correlations among stocks. Empirically, Boutchkova et al. (2011) showed that industries' volatility increases during national election years compared with non-election years, especially in the industries that are more sensitive to political events. As equity volatility is positively related to asset volatility, according to the structural model originated from Merton's (1974) seminal work, an increase in equity volatility results in a higher probability of unlevered asset value hitting or falling below the default boundary.[8] This suggests a positive relationship between political uncertainty and firm-level credit risk, especially for firms with high equity volatility and in policy-sensitive industries. To examine this assumption, we built our base hypothesis below.

Hypothesis 1:. Political uncertainty is positively related to firm-level credit risk.

Further, as documented in Boutchkova et al. (2011), local and global political risk have different impacts on systematic and idiosyncratic volatility components. Also, Campbell and Taksler (2003)[9] argued that the upward trend in corporate bond yields in recent decades is mainly explained by the upward trend in idiosyncratic equity volatility. Therefore, to further examine the equity volatility channel through which political uncertainty affects single-name credit risk, we decompose total volatility into systematic and idiosyncratic components to determine the heterogeneous impact of policy uncertainty through each sub-channel.

Hypotheses 2:. The impact of political uncertainty on firm-level credit risk is more pronounced for the firms with high idiosyncratic volatility.

2.2.2. Debt rolling over channel

Political uncertainty leads to a well-known *wait-and-see effect* under which investors choose to exercise real options to reduce or delay investments when future policies are ambiguous.[10] The wait-and-see effect is prominent not only in corporate investments but also in financial markets. For instance, Francis et al. (2013)[11] documented that at times of political uncertainty institutional investors reduce their common stock holdings by 0.76–2.1%. Similarly, the wait-and-see effect reduces the demand for risky investments in corporate debt market. The hesitation over investments and the preference for reducing exposure to risk magnify financial market frictions by shrinking the supply of funds and enlarging refinancing (or *rollover*) costs. Consequently, equity holders who absorb rollover costs choose to let a firm default earlier by raising the endogenous default boundary to maximize total equity value optimally after balancing anticipated capital gains and total costs of keeping a firm alive, which is shown in the theoretical model developed by He and Xiong (2012).[12] This results in a significant

[3] The entrance barriers to the CDS market are high. First, the relatively large trading size blocks most individual investors and even small financial institutions. For example, Chen et al. (2011) showed that the mean, median, and mode of trade size for single-name corporate CDS contracts are $6.68, $5.00, and $5.00 million, respectively (see Table 2). Further, according to the credit default swap market report at the International Organization of Securities Commissions, the mean, median, and modal of trade size for the top 1000 single-name corporate CDS are around $6.4, $5.8, and $5.0 million, respectively (see Table 2). Second, the complexity of the credit derivative instruments compared with equities and bonds deters investors with weak backgrounds.

[4] The CDS market is dominated by informed traders (Acharya and Johnson, 2007), most of which are big financial institutions. Bai et al. (2017) and Liu et al. (2017) shows that CDS trading significantly decreases firm's stock return synchronicity and firm-specific price crash risk, respectively.

[5] Atkeson et al. (2013) showed that in the U.S., over ninety-five percent of the gross notional in credit derivatives is consistently held by only five bank holding companies. Peltonen et al. (2014) showed that the CDS network revolves around 14 major dealers by studying a unique dataset comprising 642 financial and sovereign reference entities. Kryzanowski et al. (2015) documented market power in credit derivative markets by comparing the CDS and loan CDS (LCDS) market and building an oligopoly equilibrium model to explain the abnormal profits captured by their CDS–LCDS parity.

[6] Before 2008, there was no central clearinghouse for CDS transactions, and all transactions were done over the counter. Starting from 2009, the Intercontinental Exchange (ICE) created centralized clearinghouses in Europe and the U.S. However, most CDS transactions are still done over the counter, as documented by the trading warehouse in the Depository Trust & Clearing Corporation (DTCC).

[7] Longstaff et al. (2005) documented that the liquidity factor accounts for a significant portion of corporate bond spreads. Huang and Huang (2012) showed that credit risk can only partially explain corporate yield spreads where the unexplained part is a "credit spread puzzle". The CDS spread primarily reflects the default risk of a reference entity. Since most CDS contracts were traded in the OTC market before the establishment of the central clearinghouse, the search costs are not low as shown in Tang and Yan (2007). Nonetheless, the CDS market is still quite liquid compared with the secondary corporate bond market.

[8] Since Merton (1974) assume an exogenous default boundary equal to the face value of total outstanding debt, an increase in asset volatility only affects the probability of default. However, in a structural model with an endogenous default boundary, such as Leland's (1994) and Leland and Toft's (1996), an increase in asset volatility affects both the probability of default and the losses from default and results in higher credit risk.

[9] Campbell and Taksler (2003) showed that corporate debt and equity value are affected by the total volatility comprising systematic and idiosyncratic components. Their empirical work showed that the increase in corporate bond yields in recent decades can mainly be explained by the upward trend in idiosyncratic equity volatility.

[10] Bernanke (1983) showed the real option effects when uncertainty plays a role in delaying investment decisions. Julio and Yook (2012) provided empirical evidence that firms reduce corporate investment expenditures in election years.

[11] Cloak et al. (2013) documented a decrease in initial public offering activity during the political uncertainty surrounding gubernatorial elections in the United States.

[12] He and Milbradt (2014) built a theoretical model to show that a default–liquidity loop significantly boosts the credit spread of a corporate bond.

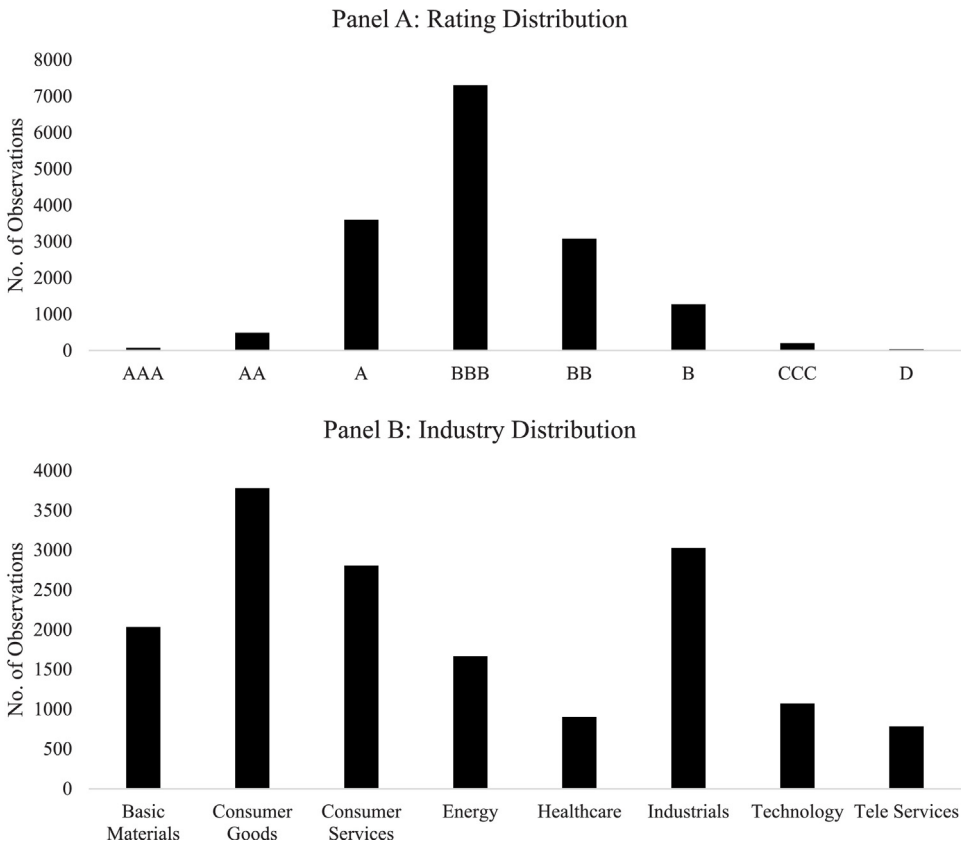

Fig. 1. Distribution of observations.

increase in the default risk of a firm, especially for firms with high rollover pressure. To examine this assumption, we construct our third hypothesis below.

Hypothesis 3:. The impact of political uncertainty on firm-level credit risk is more pronounced for the firms with high debt rollover risk.

3. Data description

3.1. Credit spread data

We used the end-of-day composite quotes provided by Markit Company[13] in this study. Markit, a leading player in CDS market, collects quotes from its partner banks and financial institutions around the world and assembles composite quotes by calculating the average of all contributed price and spread data for a variety of instrument types, entities, tiers, maturities, currencies, and doc-clauses.

We chose single-name CDS contracts with 5-year maturities and written on senior unsecured bonds. We remove those contracts written on firms belonging to financial, government, and utilities sectors.[14] We define the *CDS fiscal year* as a 12-month period that starts from the fourth month after the fiscal year end of a firm.[15] After merging our data with other financial databases, our final sample contains 3685 single-name contracts and 16076 contract-year observations in 30 countries spanning from January 2003 to December 2012. Detailed country distributions are reported in Table 1, and rating and industry distributions are reported in Fig. 1. We winsorize all the variables at 1% and 99% percentiles.

We adopted two proxies to measure credit risk. The primary one is the means of day-end CDS quotes in a year (*CDS Means*). The alternative one is the maximum of day-end CDS quotes in a year (*CDS Max*). The descriptive statistics are reported in Table 2. The mean of the annual CDS spread, approximately 171 *bps*, is greater than the median, approximately 103 *bps*, indicating a positive skewness of CDS spreads. *CDS depth* (or liquidity), measured by the average number of distinct dealers who provide quotes,[16] shows that a 5-year single-name composite quote is supported by 6.14 independent dealers on average, while the minimum number to generate a valid composite quote is 2.

In addition, as shown in Fig. 1, the majority of observations in our sample fall into *A*, *BBB*, and *BB* rating categories, and most of single-name contracts belong to consumer goods, consumer services, industrial, and basic materials sectors. For robustness, we conducted our regressions with 1-, 3-, 7-, and 10-year CDS contracts.

3.2. Political uncertainty data

We used a national election dummy that equals to one in election years and zero otherwise to proxy for political uncertainty. *National election year* is defined as the year in which a national elec-

[13] Markit's CDS data has been widely used in the literature, such as by Zhang et al. (2009); Jorion and Zhang (2009); Carlson and Lazrak (2010); Berndt et al. (2010); Longstaff (2010); McConnell and Saretto (2010); Kapadia and Pu (2012); Qiu and Yu (2012); and Friewald et al. (2012).

[14] Our results hold for firms that fall into financial, government, and utilities sectors. The results are available on request.

[15] We do not have the exact filling data of financial report. To avoid forward-looking, we assume that the financial reports are disseminated within 3 months after a fiscal year end.

[16] Qiu and Yu (2012) studied endogenous liquidity in the single-name CDS market as measured by the number of distinct dealers providing quotes.

Table 1
Country election characteristics.

Country name	Legal origin	Election system	Election type	Election timing	No. of observations	No. of elections
Argentina	Civil Law	Presidential	Presidential	Fixed	13	1
Australia	Common Law	Parliamentary	Legislative	Flexible	369	5
Austria	Civil Law	Parliamentary	Legislative	Flexible	46	3
Belgium	Civil Law	Parliamentary	Legislative	Fixed	66	2
Brazil	Civil Law	Presidential	Presidential	Fixed	132	2
Canada	Common Law	Parliamentary	Legislative	Flexible	688	5
Finland	Civil Law	Hybrid	Legislative	Flexible	134	2
France	Civil Law	Hybrid	Presidential	Fixed	609	3
Germany	Civil Law	Parliamentary	Legislative	Flexible	530	4
Greece	Civil Law	Parliamentary	Legislative	Flexible	15	1
India	Common Law	Parliamentary	Legislative	Flexible	94	2
Indonesia	Civil Law	Presidential	Presidential	Fixed	12	2
Ireland	Common Law	Parliamentary	Legislative	Flexible	25	2
Italy	Civil Law	Parliamentary	Legislative	Flexible	125	3
Japan	Civil Law	Parliamentary	Legislative	Flexible	2834	4
Korea (Republic of)	Civil Law	Hybrid	Presidential	Fixed	169	3
Malaysia	Common Law	Parliamentary	Legislative	Flexible	52	3
Mexico	Civil Law	Presidential	Presidential	Fixed	69	3
Netherlands	Civil Law	Parliamentary	Legislative	Flexible	259	3
New Zealand	Common Law	Parliamentary	Legislative	Flexible	22	3
Norway	Civil Law	Parliamentary	Legislative	Fixed	105	2
Philippines	Civil Law	Presidential	Presidential	Fixed	33	2
Portugal	Civil Law	Parliamentary	Legislative	Flexible	47	3
Singapore	Common Law	Parliamentary	Legislative	Flexible	72	3
South Africa	Common Law	Parliamentary	Legislative	Flexible	43	2
Spain	Civil Law	Parliamentary	Legislative	Flexible	111	3
Sweden	Civil Law	Parliamentary	Legislative	Fixed	219	2
Thailand	Common Law	Parliamentary	Legislative	Flexible	43	2
United Kingdom	Common Law	Parliamentary	Legislative	Flexible	1019	3
United States	Common Law	Presidential	Presidential	Fixed	8121	4
Total					16,076	82

tion is held. Specifically, similar to Julio and Yook (2012), we define the *election year* among CDS fiscal years as a year in which the election date is less than or equal to 3 months before or 9 months after a CDS fiscal year end. Although a national election is not a direct measure of political risk, political uncertainty is much higher during an election year.[17] The primary sources of national election data are the Constituency-Level Elections Archive (CLEA) and World Bank Database of Political Institutions.[18] We verified and supplemented election data with the literature[19] and various internet sources, including but not limited to Wikipedia, Election Resources, and official government websites.[20]

Similar to Julio and Yook (2012), we focused on national elections selecting country's chief executive. A presidential election is considered as a national election in countries with presidential systems because generally in such countries the office of president holds the supreme executive power, while a legislative election is used for the countries with parliamentary systems under which a cabinet that is responsible to parliament holds the executive power. For countries with hybrid systems combining both parliamentary and presidential democracy, we selected the election of the leader who exerts the most executive power.[21]

Another important feature of national elections is the timeframe that defines when elections are held. For instance, with flexible timing, a government can be dissolved before the expiry of its full term for reasons such as economic performance, internal conflicts, and scandals.[22] We extracted timing information from election laws and practices, as well as from the classifications provided in Alesina et al. (1992) and Julio and Yook (2012).

After merging with the financial information dataset, we compose the final sample that covers 84 national elections spanning from 2002 to 2012 in 30 countries around the world, as shown in Table 1. Approximately one-third of these countries have a presidential system with presidential elections, and half have a fixed timetable for national elections. The distribution of observations across countries is not even. For instance, observations in the U.S. comprise approximately half of the full sample.

3.3. Control variables

To isolate the impact of national elections on credit risk, we collect the well-established determinants of CDS spreads from the literature and control them in multivariate regressions. In particular, following Collin-Dufresne et al. (2001) and Ericsson et al. (2009), we control for a firm's fundamental performance and equity performance. In addition, we also incorporate the liquidity of CDS contracts; CDS restructuring clauses; and year, industry and country fixed-effects.

Specifically, firm's fundamental information was extracted from the OSIRIS international dataset, which provides comprehensive financial reporting information around the world. We use the ratio of current asset over current liabilities to measure a firm's ability to pay off short-term liabilities with cash or equivalent short-term

[17] Bialkowski et al. (2008) and Boutchkova et al. (2011) showed that stock market volatility is significantly higher than normal during election periods. Gao and Qi (2013) studied the impact of U.S. gubernatorial elections on the municipal bond market.

[18] See Beck et al. (2003, 2004) and Keefer (2007), http://www.electiondataarchive.org/index.html and http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20649465~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html.

[19] We used the timing and type of election (see Table 1) collected by Julio and Yook (2012) for some countries missing information.

[20] See http://www.wikipedia.org/, http://www.electionresources.org/, among others.

[21] We consider Julio and Yook's (2012) classification to be a reference, as well.

[22] Ito (1990) studied Japanese elections and found that the Japanese government opportunistically and endogenously selects their timing.

Table 2
Descriptive statistics and correlation matrix.

Panel A: Descriptive statistics

	Obs	Mean	STD	SKEW	P5	P25	P50	P75	P95
CDS Means (bps)$_t$	16076	171	183	2.53	25	57	103	208	552
CDS Maxes (bps)$_t$	16076	269	291	2.53	42	90	163	331	864
Election Dummy$_t$	16076	0.16	0.37	1.86	0.00	0.00	0.00	0.00	1.00
CDS Depth$_t$	16076	6.14	3.38	0.90	2.00	3.08	5.94	7.96	12.60
Current Ratio$_{t-1}$	16076	0.38	0.53	3.25	0.00	0.07	0.21	0.47	1.38
Leverage$_{t-1}$	16076	0.30	0.20	0.73	0.04	0.15	0.27	0.42	0.69
ROA$_{t-1}$	16076	0.04	0.07	−1.68	−0.07	0.02	0.04	0.07	0.12
Log Asset$_{t-1}$	16076	16.26	1.21	0.26	14.39	15.37	16.18	17.08	18.46
MtoB$_{-1}$	16076	2.72	2.95	3.95	0.67	1.22	1.91	3.07	6.98
Total-Vol$_t$	16076	0.09	0.05	1.62	0.03	0.06	0.08	0.11	0.18
Sys-Vol$_t$	16076	0.08	0.04	2.04	0.04	0.05	0.07	0.10	0.16
Idio-Vol$_t$	16076	0.05	0.02	0.77	0.02	0.03	0.04	0.06	0.08
Rollover$_t$	16076	0.04	0.06	2.93	0.00	0.00	0.02	0.06	0.16
GDP Growth$_t$	16076	6.62	2.22	−1.52	1.50	6.50	7.50	8.00	8.50

Panel B: Correlation matrix

	CDS Mean	*CDS Max*	*Election Dummy*	*CDS Depth*	*Current ratio*	*Leverage*	*ROA*	*Log Asset*	*MtoB*	*Equity Volatility*	*GDP Growth*
CDS Mean	1										
CDS Max	0.9133 (<.0001)	1									
Election Dummy	−0.0232 (0.0043)	0.0014 (0.8627)	1								
CDS Depth	−0.1146 (<.0001)	0.0012 (0.8804)	0.0033 (0.6829)	1							
Current Ratio	0.0654 (<.0001)	0.0209 (0.0104)	−0.0346 (<.0001)	−0.17 (<.0001)	1						
Leverage	0.5124 (<.0001)	0.5111 (<.0001)	0.041 (<.0001)	0.0436 (<.0001)	−0.1722 (<.0001)	1					
ROA	−0.2511 (<.0001)	−0.2033 (<.0001)	0.0724 (<.0001)	0.0731 (<.0001)	−0.0324 (0.0001)	−0.2579 (<.0001)	1				
Log Asset	−0.2051 (<.0001)	−0.1313 (<.0001)	0.0397 (0.075)	0.3957 (<.0001)	−0.2361 (<.0001)	0.0576 (<.0001)	0.1379 (<.0001)	1			
MtoB	−0.0688 (<.0001)	−0.0653 (<.0001)	−0.0621 (<.0001)	0.0428 (<.0001)	0.0088 (<.0001)	−0.2113 (0.2785)	0.0929 (<.0001)	−0.075 (<.0001)	1		
Total-Vol	0.5001 (<.0001)	0.551 (<.0001)	0.0379 (<.0001)	−0.0792 (<.0001)	0.0477 (<.0001)	0.3333 (<.0001)	−0.1519 (<.0001)	−0.2138 (<.0001)	−0.0745 (<.0001)	1	
GDP Growth	0.01 (0.2202)	0.0843 (<.0001)	0.1249 (<.0001)	0.2116 (<.0001)	−0.0385 (<.0001)	−0.0567 (<.0001)	0.1767 (<.0001)	−0.0721 (<.0001)	0.1093 (<.0001)	0.0738 (<.0001)	1

This table reports the descriptive statistics (Panel A) and the correlation matrix (Panel B) of key variables. Our sample includes 3528 single-name CDS contracts and 14,194 contract-year observations across 30 countries spanning from January 2003 to December 2012.

Table 3
Difference tests.

	CDS(0) − CDS(−2)	*CDS(0) − CDS(−1)*	*CDS(0) − CDS(1)*	*CDS(0) − CDS(2)*
CDS Mean (bp)	44.84***	37.33***	2.40	11.32**
p-value (*t*-test)	(<.0001)	(<.0001)	(0.6395)	(0.0464)
CDS Max (bp)	70.88***	53.19***	27.32***	54.79***
p-value (*t*-test)	(<.0001)	(<.0001)	(0.0011)	(<.0001)

This table reports the differences in CDS spreads between election and non-election years under various measures. *CDS(0)* denotes the CDS spread in election years. *t* denotes the number of years before/after elections. The *p*-values for *t*-tests are reported in parentheses.
* 10% significance level.
** 5% significance level.
*** 1% significance level.

investments; financial leverage to reflect capital structure; return on assets (ROA) to proxy for profitability; the logarithm of total asset to proxy for size; and market-to-book-value ratio to indicate pricing status. Since Cao et al. (2010) showed that historical volatility has the power to explain credit spreads, we also control for historical equity volatility. Moreover, we used the number of distinct dealers providing quotes on 5-year CDS contracts to control for the liquidity of CDS contracts. Detailed explanations of variables are reported in Appendix A. We winsorize all control variables at 1% and 99% percentiles to mitigate the impact of extreme values. Panel B of Table 3 reports the correlations between each pair of control variables.

4. Political uncertainty and credit risk

4.1. Univariate analysis

To visualize the change in credit risk around national elections, we plotted the aggregated means of various credit-risk measures, including *CDS_mean*, *CDS_median*, and *CDS_max*, in Fig. 2. We defined *national election years* as year 0. Since the number of years between national elections on average is about four in most countries, we exhibit credit risk 2 years before and after election years. As expected, we find that all credit risk measures increase gradually when national elections are approaching and reach a peak

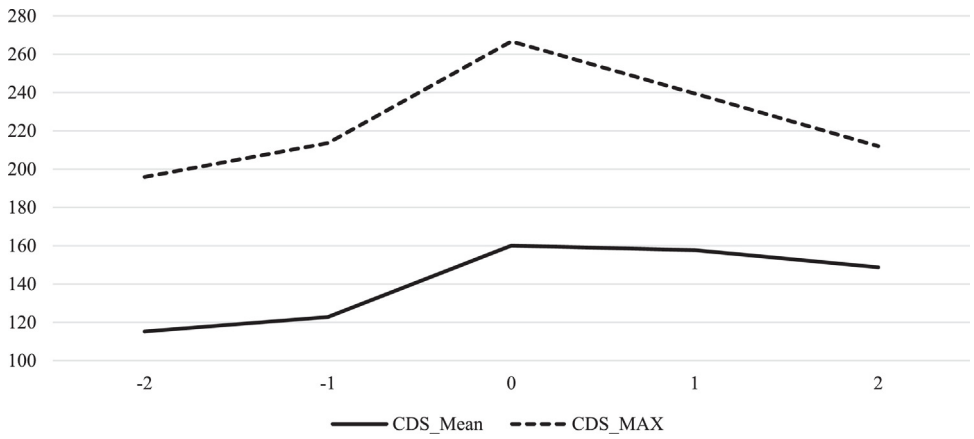

Fig. 2. Credit risk around election years. The figure depicts the mean of various CDS spread levels across firms around national election years. *CDS_mean*, *CDS_median*, *CDS_max* are, respectively, the means, medians, and maximums of the daily 5-year CDS spread of a firm in a year. The *event date* denotes the number of years before/after national elections.

in election years. After elections, all the measures plummet and start to revert back to the pre-election level.

Numerically, as reported in Table 3, *CDS Means* in election years are, on average, much greater than those in non-election years. The deviation becomes greater as the number of years to an election increases. For instance, *CDS Means* in election years are about 37 *bp* and 44 *bp* greater than those of 1 and 2 years before national elections, respectively. In addition, the incremental amounts of *CDS Max* are the largest compared with *CDS Means*, suggesting an even bigger positive skewness in national election years.

4.2. Multivariate regression results

We construct the following multivariate model to study the impact of political uncertainty on firm-level credit risk:

$$\textit{Credit Risk Measures}_t = \alpha + \beta \textit{Election Dummy}_t + \gamma \textit{Control variables}_t + \varepsilon_t \quad (4.1)$$

where *Credit Risk Measures* refers to *CDS Mean* or *CDS Max*; *Election Dummy* equals one in election years that is defined in previous section and zero otherwise; *Control Variables* contain firm-level, industry-level and country-level variables. Specifically, following Collin-Dufresne et al. (2001) and Ericsson et al. (2009), we use rating, liquidity of CDS, CDS restructure clause, current ratio, leverage, return on assets, size, market-to-book ratio, and equity volatility to control for firm-level characteristics. We use GDP growth and country dummies to reflect country-level heterogeneity. We also include the fixed-effects of year and industry. All standard errors are corrected by a firm clustering approach.

Using panel regression in full sample, we document significantly positive coefficients for *Election Dummies* for both credit risk measures. This supports a positive relationship between political uncertainty and firm-level credit risk, consistent with the *hypothesis 1*. Since the distribution of observations across countries is unbalanced, this result might be biased toward countries with a large number of observations, such as the U.S. and Japan. To correct for such bias, we employ the reciprocal of the total number of observations in each country as a weight to conduct weighted ordinary least squares (OLS) regressions. In contrast to the OLS approach that minimizes the residual sum of squares, weighted-OLS minimizes the weighted sum of squares. Thus, using the reciprocal of the total number of observations in a country as a weight corrects the bias toward those countries with a large amount of observations. As reported in Table 4, we document positive coefficients for *Election Dummy* for both credit risk measures, adding more credence to the positive impact of political risk on firm's credit risk. Furthermore, we also perform panel regression for the subsample after removing the U.S. observations and find consistent results. Additionally, since having fixed effects could create potential false significances, we perform the regressions after removing year, industry, country and CDS-Clause fixed-effects to check the robustness of our findings. As reports in Table A1 of online appendix, we document significantly positive coefficients for *Election Dummies* in all regression models, which strengthen the positive impact of political uncertainty on the CDS spreads.

Moreover, regarding control variables, we find that leverage and equity volatility are positively related to single-name CDS spreads, while return on assets, market-to-book ratio and size are negatively related to CDS spreads, which are consistent with the literature (Ericsson et al., 2009).

4.3. Short-run and long-run credit risk

In the previous section, we document a positive relation between political uncertainty and the firm-level credit risk in election years during which the political uncertainty is high because of the ambiguous election outcome. When the dust of outcome settles after national election, the impact of national election on firm-level credit risk should be weaken or disappear. To test this conjecture, we use the means of CDS spreads 1-year after national election as dependent variable to conduct panel regression and report the results in Panel A of Table 5. As expected, we find that the coefficient of election dummy is positive but not significant at the conventional level.

Furthermore, we also check the impact of political uncertainty on the CDS contracts with other maturities, such as 1 year, 3 year, 7 year, and 10 year, which reflect relatively short- and long-run credit risk, respectively. Han and Zhou (2015) document large variations in the shape of the term structure of CDS spreads over time and across firms. To examine heterogeneity across maturities, we report the multivariate regression results for 1-, 3-, 5-, 7-, and 10-year CDS contracts in Panel B of Table 5.

We find that the positive relationship between national elections and CDS spreads is robust for CDS contracts with all other maturities.[23] Also, we note that the values of the coefficients for *Election Dummy* decrease as maturity increases up to 7-year contracts.

[23] The CDS contracts for 1, 3, 7, and 10 years are less liquid than those for 5 years. Thus, the number of observations for 1-, 3-, 7-, and 10-year contracts is smaller compared with that of 5-year contracts.

Table 4
Political uncertainty and CDS spreads.

	Panel regression			Weighted OLS regression
	Full sample		Subsample without U.S.	Full sample
	CDS Means (Model 1)	*CDS Maxes (Model 2)*	*CDS Means (Model 3)*	*CDS Means (Model 4)*
Election Dummy	0.045***	0.016*	0.018**	0.024**
	(5.47)	(1.76)	(2.03)	(2.03)
Rating Dummy	−0.811***	−0.737***	−0.646***	−0.665***
	(35.47)	(30.80)	(18.39)	(57.39)
CDS Depth	0.012***	0.021***	0.017***	0.003*
	(5.49)	(9.21)	(5.58)	(1.95)
Current Ratio	0.013	0.004	0.076***	0.031***
	(1.06)	(0.32)	(3.34)	(3.62)
Leverage	1.423***	1.330***	1.264***	1.443***
	(31.88)	(29.05)	(21.07)	(55.03)
ROA	−0.454***	−0.294***	−0.764***	−0.687***
	(7.22)	(4.12)	(7.88)	(9.99)
Log Assets	−0.125***	−0.067***	−0.119***	−0.124***
	(15.02)	(7.69)	(10.07)	(27.35)
MtoB	−0.013***	−0.013***	−0.004	−0.012***
	(6.36)	(5.96)	(0.80)	(8.36)
Total-Vol	1.925***	2.910***	2.517***	3.573***
	(16.61)	(21.06)	(12.99)	(33.75)
GDP Growth	0.013***	0.060***	−0.016***	0.018***
	(3.09)	(11.87)	(3.73)	(2.76)
Intercept	6.831***	5.643***	7.052***	6.025***
	(28.26)	(22.78)	(27.11)	(41.53)
Year-Fixed Effects	YES	YES	YES	YES
Industry-Fixed Effects	YES	YES	YES	YES
Country-Fixed Effects	YES	YES	YES	YES
CDS Clause-Fixed Effects	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	NO
R^2	0.69	0.62	0.71	0.70
N	16,076	16,076	7,955	16,076

This table reports the panel regression results for the logarithm of the means and maximum of the daily 5-year CDS spread level in a year for the full sample. *Election Dummy* equals one in election years and zero otherwise. We used the total number of observations in a country as a weight to perform weighted OLS regressions. The detailed explanations of other variables are shown in Appendix A.

* 10% significance level.
** 5% significance level.
*** 1% significance level.

4.4. Endogeneity and simultaneity analysis

4.4.1. Possible reverse causality

So far, we have established the positive relation between political uncertainty and firm-level credit risk. Since CDS market itself is a channel revealing information about economic status, the fluctuation of CDS spreads may have a reverse causality on national elections with flexible timing. Such reverse causality is less likely to occur for three main reasons when we use national election to proxy for political uncertainty. First, the timing of a national election is mostly affected by macroeconomic status, which is less likely to be affected by firm-level credit risk. Second, CDS contracts are mostly traded in the OTC market, which is less publicly transparent than the equity and debt markets. Third, the number of firm CDS contracts in emerging countries is small, which results in the reverse causality of CDS spreads having a very limit impact on the economies of these countries. Nonetheless, we run the regression with the subsample that only include the countries whose election timing is fixed. As reported in Table A3 of online appendix, the positive relation between political uncertainty and CDS spreads is robust for this subsample.

4.4.2. Simultaneity analysis

Another important source of endogeneity is the possibly omitted variables that simultaneously drive both dependent and independent variables. Since the timing of national elections is usually affected by country-level macro variables that might also affect the default risk of single firms, we choose the following macro variables to represent various aspects of country-level information: financial risk rating from ICRG to reflect the integrated financial risk; percentage of foreign debt over GDP to reflect the country-level insolvency risk; exchange rate stability to reflect the stability of a local currency that is critical for a firm to explore the international market; corruption to reflect the internal governance of a government in power; religion in politics to reflect the impact of the local culture on politics; and government stability to reflect government unity, legislative strength, and popular support.

As reported in Table 6, we find that financial risk rating, ratio of foreign debt over GDP and government stability are negatively related to CDS spreads, while exchange rate stability and corruption are positively related to CDS spreads. Most importantly, the positive relationship between *National Election Dummy* and CDS spreads is always significant across all regression models, providing solid evidence to support the positive relationship between political uncertainty and firm-level credit risk.

5. Heterogeneity of the influence of political uncertainty on credit risk

5.1. Heterogeneity across countries

Our sample covers 30 countries with various legislative systems and election characteristics, leading to various levels of uncertainty in national election years. To examine how election characteristics and legislative systems affect the relationship between political

Table 5
Long-run versus short-run credit risk.

	Panel A	Panel B			
	1-year After	1-year	3-year	7-year	10-year
Election Dummy	0.007	0.049***	0.039***	0.028***	0.031***
	(0.89)	(4.39)	(4.22)	(3.54)	(4.20)
Rating Dummy	−0.677***	−0.800***	−0.811***	−0.742***	−0.702***
	(27.69)	(27.78)	(32.79)	(34.74)	(34.54)
CDS Depth	0.025***	0.005*	0.011***	0.011***	0.010***
	(9.46)	(1.81)	(4.75)	(5.48)	(5.12)
Current Ratio	0.012	0.013	0.014	0.014	0.016
	(1.09)	(0.83)	(1.05)	(1.25)	(1.54)
Leverage	1.411***	1.633***	1.533***	1.336***	1.249***
	(30.17)	(29.26)	(30.96)	(30.23)	(29.56)
ROA	−0.562***	−0.301***	−0.357***	−0.374***	−0.380***
	(9.24)	(3.37)	(4.89)	(6.21)	(6.66)
Log Asset	−0.139***	−0.133***	−0.127***	−0.117***	−0.113***
	(16.32)	(13.35)	(14.51)	(15.37)	(15.70)
MtoB	−0.017***	−0.022***	−0.016***	−0.011***	−0.010***
	(6.72)	(7.89)	(6.85)	(5.39)	(5.04)
Total-Vol	2.041***	3.885***	2.721***	1.954***	1.802***
	(16.89)	(24.68)	(20.94)	(17.62)	(17.13)
GDP Growth	0.010**	0.070***	0.034***	0.014***	0.014***
	(2.49)	(11.10)	(7.23)	(3.60)	(3.83)
Intercept	6.277***	6.026***	6.725***	6.906***	6.930***
	(25.22)	(19.67)	(18.28)	(19.91)	(21.17)
Year-Fixed Effects	YES	YES	YES	YES	YES
Industry-Fixed Effects	YES	YES	YES	YES	YES
Country-Fixed Effects	YES	YES	YES	YES	YES
CDS Clause-Fixed Effects	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES
R^2	0.65	0.67	0.67	0.66	0.65
N	12,059	14,716	14,716	14,716	14,716

This table reports the panel regression results for the impact of national elections on the logarithm of the means of 5-year CDS spread 1 year after national election (Panel A) and a robustness check for the CDS contracts with other maturities (Panel B). *Election Dummy* equals one in election years and zero otherwise. The detailed explanations of other variables are shown in Appendix A. The *t*-values are clustered by the CDS contracts and reported in the parentheses.

* 10% significance level.
** 5% significance level.
*** 1% significance level.

uncertainty and credit risk, we introduce three dummies: *Election Type Dummy*, *Election Timing Dummy*, and *Legal System Dummy*.

5.1.1. Presidential and legislative elections

There are two types of elections in our sample, presidential and legislative (or parliamentary) elections. Presidential elections in general are associated with a relatively greater number of veto players, suggesting a high degree of checks and balances in contrast to parliamentary systems. Also, usually, legislative elections simultaneously change control of both the executive and legislative branches of government, while presidential elections only change a country's executive. These differences suggest that it is relatively harder to change existing laws, regulations, and economic policies after a presidential election than after a legislative election. Thus, legislative elections generally introduce higher uncertainty into the political environment, which is expected to be associated with higher credit risk. To examine this assumption, we incorporate an interaction term *Election Dummy* and *Election Type Dummy* into our base model. In Table 7, we document a positive coefficient for the interaction term, suggesting that the increment of CDS spreads in election years is, on average, greater for legislative elections than presidential elections.

5.1.2. Election timing

Election timing is another important characteristic of national elections that affects the level of political uncertainty. The timing of elections is fixed in some countries; for instance, in most presidential systems, a presidential election occurs every 4 years. However, timing is flexible for other countries. For example, in Japan the incumbent government is able to select the timing of the election and call a national election. Ito (1990) and Cargill and Hutchinson (1991) documented, respectively, that the opportunistically selected timing of an election is highly related to economic expansion and real GNP growth. In contrast to fixed-election timing, flexible national elections that hit the market as a shock usually have a much severer impact on financial markets. Therefore, we expect that firm credit risk increases more in countries with flexible timing. By incorporating an interaction term *Election Dummy* and *Election Timing Dummy*, which equals one for flexible timing and zero otherwise, as expected, we document a positive coefficient for this interaction term.

5.1.3. Legal origin

As shown in La Porta et al. (1998), a country's legal origin is an important political style factor that affects financial markets. Using empirical data, they found that common law countries generally have stronger legal rules protecting corporate shareholders and creditors than civil law countries. Differences in investor legal protections across countries might affect the response of investors faced with a change of government leader. For instance, a better legal system to protect the rights of investors should alleviate the impact of political uncertainty on firm's credit risk. Following La Porta et al.'s (1998) work,[24] we identify the legal origins of almost all the countries in our sample, except for Poland, the Russian Federation and Luxembourg. We set the *Legal Origin Dummy* to one for common law countries and zero for civil law countries. As expected,

[24] La Porta et al. (1998) reported detailed legal system classifications for each country in Tables 2 and 4.

Table 6
CDS spreads and possibly omitted macro variables.

	CDS Means (Model 1)	*CDS Means (Model 2)*	*CDS Means (Model 3)*	*CDS Means (Model 4)*	*CDS Means (Model 5)*	*CDS Means (Model 6)*	*CDS Means (Model 7)*
Election Dummy	0.038***	0.053***	0.049***	0.047***	0.046***	0.034***	0.049***
	(4.69)	(6.46)	(5.96)	(5.72)	(5.55)	(4.25)	(5.96)
Financial Risk Rating	−0.015***						−0.021***
	(8.11)						(7.62)
Foreign Debt/GDP		−0.042***					−0.019***
		(7.15)					(2.59)
Exchange Rate Stability			0.013***				0.049***
			(3.69)				(10.32)
Corruption				0.098***			0.073***
				(8.56)			(6.54)
Religion in Politics					−0.028		−0.070***
					(1.51)		(3.43)
Government Stability						−0.026***	−0.023***
						(9.77)	(8.55)
Control Variables	YES	YES	YES	YES	YES	YES	YES
Year-Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Industry-Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Country-Fixed Effects	YES	YES	YES	YES	YES	YES	YES
CDS Clause-Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES	YES	YES	YES
R^2	0.70	0.69	0.69	0.69	0.69	0.69	0.69
N	16,076	16,076	16,076	16,076	16,076	16,076	16,076

This table reports the panel regression results for logarithm of the means of the daily 5-year CDS spread in a year after incorporating possibly omitted macro variables. *Election Dummy* equals one in election years and zero otherwise. The detailed explanations of other variables are shown in Appendix A. The *t*-values are clustered by the CDS contracts and reported in the parentheses.
* 10% significance level.
** 5% significance level.
*** 1% significance level.

Table 7
Heterogeneity across countries.

	Election type *CDS Means (Model 1)*	Election timing *CDS Means (Model 2)*	Legal origin *CDS Means (Model 3)*
Election Dummy	0.042***	0.041***	0.100***
	(2.98)	(3.08)	(9.10)
Election Dummy × Election Type Dummy	0.005*		
	(1.92)		
Election Type Dummy	−0.161		
	(0.83)		
Election Dummy × Election Timing Dummy		0.006*	
		(1.88)	
Election Timing Dummy		−0.161	
		(0.83)	
Election Dummy × Legal System			−0.112***
			(6.60)
Legal System			−0.309
			(1.61)
Control Variables	YES	YES	YES
Year-Fixed Effects	YES	YES	YES
Industry-Fixed Effects	YES	YES	YES
Country-Fixed Effects	YES	YES	YES
CDS Clause-Fixed Effects	YES	YES	YES
Firm Clustering	YES	YES	YES
R^2	0.69	0.69	0.69
N	16,076	16,076	16,076

This table reports the panel regression results for the logarithm of the means of a 5-year CDS spread in a year with various interaction terms. *Election Type Dummy* equals 1 for legislative elections and zero otherwise. *Election Timing Dummy* equals one for flexible-timing elections and zero otherwise. *Legal System Dummy* equals one for common-law countries and zero otherwise. The detailed explanations of other variables are shown in Appendix A. The *t*-values are clustered by CDS contracts and reported in the parentheses.
* 10% significance level.
** 5% significance level.
*** 1% significance level.

we document a significantly negative coefficient for the interaction term of *Election Dummy* and *Legal Origin*. This not only confirms our conjecture that investor protections mitigate the influence of political uncertainty on firm credit risk, but also reinforces the assumptions of hypotheses 1 and 2.

5.2. Heterogeneity across firms

5.2.1. Politically connected firms

The term *politically connected firms* (PCF) refers to firms that have direct or indirect connections to the government. As documented by Faccio (2006), Faccio et al. (2006), among others, such firms ben-

Table 8
Political connection and international diversification.

	Political connection *CDS Means* *(Model 1)*	% of foreign subs *CDS Means* *(Model 2)*	No. of foreign countries *CDS Means* *(Model 3)*
Election Dummy	0.047***	0.087***	0.047***
	(5.64)	(5.64)	(4.08)
Election Dummy × Political Connection	−0.112**		
	(2.46)		
Political Connection	0.096		
	(1.63)		
Election Dummy × % of Foreign Subs		−0.087***	
		(3.41)	
% of Foreign Subs		−0.012	
		(0.41)	
Election Dummy × No. of Foreign Countries			−0.0001
			(0.35)
No. of Foreign Countries			−0.003***
			(6.38)
Control Variables	YES	YES	YES
Year-Fixed Effects	YES	YES	YES
Industry-Fixed Effects	YES	YES	YES
Country-Fixed Effects	YES	YES	YES
CDS Clause-Fixed Effects	YES	YES	YES
Firm Clustering	YES	YES	YES
R^2	0.69	0.69	0.69
N	16,076	16,076	16,076

This table reports the panel regression results for the logarithm of the means of a 5-year CDS spread in a year with various interaction terms. *Political Connection* equals 1 for the firms that have connections with government and zero otherwise. *% of Foreign Subs* is the percentage of the number of subsidiaries in foreign countries out of the total number of subsidiaries for a firm. *No. of Foreign Countries* is the total number of countries in which a firm has subsidiaries. The detailed explanations of other variables are shown in Appendix A. The *t*-values are clustered by the CDS contracts and reported in the parentheses.
* 10% significance level.
** 5% significance level.
*** 1% significance level.

efit from government connections, preferential treatment, easier access to finance, and an implicit guarantee of government bailout in times of distress. Since political uncertainty affects the future relationship of the government with PCFs, and especially their access to public funding sources, we anticipate that PCFs are best served when the incumbent remains in power. Hence, the impact of national election on PCFs should be more severe compared with the effect on non-PCFs. According to the regression results in Table 8, as expected, we find a significant negative coefficient for *PCF Dummy*.

5.2.2. International diversification

Since multinational firms have geographically diversified lines of business and derive cash flow from multiple countries, the impact national election on the credit risk of these firms is expected to be less pronounced. To test this assumption, we collect information about the geographical distribution of subsidiaries from OSIRIS. Specifically, we use the percentage of the number of foreign subsidiaries among all subsidiaries (*% of Foreign Subs*) and the number of foreign countries in which a multinational firm had a subsidiary to reflect the level of international diversification (*No. of Foreign Countries*). As reported in Table 8, we document significantly negative coefficients for the *% of Foreign Subs* but not for the *No. of Foreign Countries*. The evidence suggests that increasing the number of foreign subsidiaries can significantly alleviate the influence of political uncertainty on individual firms' credit risk, but not enlarging the number of countries.

6. Possible channels

6.1. Volatility channel

To gain further insight into the volatility channel through which the uncertainty of policy changes affects firm credit risk, we decomposed total volatility into systematic and idiosyncratic volatility following the methodology of Morck et al. (2000) and Jin and Myers (2006). Specifically, we break down volatility using a two-factor model: global risk factor proxy by MSCI world index and local risk factor proxy by MSCI local country index. For each year, we ran the following regression to decompose the total return of firm *i* in country *j* into explained and unexplained components,

$$r_{i,j} = \alpha + \beta_{1,j} r_{world} + \beta_{2,j} r_i + \varepsilon_{i,j} \quad (6.1)$$

where r_{world} denotes the monthly return of MSCI world index and r_i denotes the monthly return of MSCI local index for country *i*, expressed in U.S. dollars. Systematic and idiosyncratic volatility are calculated using explained and unexplained components, respectively. As reported in Table 2, monthly systematic and idiosyncratic volatilities on average are about 8% and 5%, respectively.

We next incorporate the interaction term of *Election Dummy* and volatility measures one by one and report the panel regression results in Table 9. We find significantly positive coefficients for the interaction terms with total volatility and idiosyncratic volatility, respectively. However, we note that the coefficients for the interaction term with systematic volatility is not significant at the conventional level anymore. In a nutshell, the evidence suggests that political uncertainty affects individual firms' credit risk mainly through idiosyncratic volatility channels and confirms *hypothesis 2*.

6.2. Rollover channel

With respect to debt rollover channel through which national elections affect credit risk, we adopt the ratio of short-term debt due in 1 year over total assets to proxy for firm rollover risk. We used total asset to standardize across firms, but not total debts because a high ratio of short-term debt and total debt does not indicate a high rollover risk without accounting for the difference in leverage ratio. For example, suppose we have two firms, firms A and B with low and high leverage ratios, respectively. All the debts in firm A are short-term debt, indicating a high ratio of short-term and total debt, while firm B also uses short-term debt but not too

Table 9
Possible channels.

	Volatility channel			Rollover channel
	Total-Vol *CDS Mean* *(Model 1)*	Sys-Vol *CDS Mean* *(Model 2)*	Idio-Vol *CDS Mean* *(Model 3)*	*CDS Mean* *(Model 4)*
Election Dummy	−0.031* (1.76)	0.062*** (2.66)	−0.026 (1.41)	0.019* (1.66)
Election Dummy × Total/Sys/Idio-Vols	0.823*** (4.54)	−0.420 (0.98)	0.879*** (4.00)	
Total/Sys/Idio-Vols	1.801*** (15.05)	8.123*** (14.98)	1.893*** (13.97)	
Election Dummy × Rollover Risk				0.602*** (5.62)
Rollover Risk				−0.551*** (4.78)
Control Variables	YES	YES	YES	YES
Year-Fixed Effects	YES	YES	YES	YES
Industry-Fixed Effects	YES	YES	YES	YES
Country-Fixed Effects	YES	YES	YES	YES
CDS Clause-Fixed Effects	YES	YES	YES	YES
Firm Clustering	YES	YES	YES	YES
R^2	0.69	0.68	0.69	0.68
N	16,076	16,076	16,076	16,076

This table reports the panel regression results for the logarithm of the means of a 5-year CDS spread in a year with various interaction terms. The detailed explanations of variables are shown in Appendix A. The *t*-values are clustered by the CDS contracts and reported in the parentheses.
* 10% significance level.
** 5% significance level.
*** 1% significance level.

much, suggesting a relatively lower ratio of short-term and total debt. Because of the high leverage ratio of firm B, the rollover risk of firm B might be greater than firm A, although its ratio of short-term debt and total debt is lower. In our sample, the ratio of debts due in 1 year and total asset is on average 4% and exhibits a positive skewness.

We introduce the rollover-risk measure and the interaction term of rollover-risk proxy and *Election Dummy* into base panel regression to examine the influence of debt rollover channel. As expected, we find a significantly positive coefficient for the interaction term. This suggests that the influence of national elections on credit risk is more intense for firms with a relatively high risk of rolling over short-term debts and confirms our *hypothesis 3*.

7. Conclusion

This paper studies the impact of political uncertainty, proxied by national elections, on individual firms' credit risk in the context of single-name CDS contracts across 30 countries. We find a positive relationship between the uncertainty of policy changes and CDS spreads. This positive relationship is heterogeneous across countries and firms. Specifically, the incremental amounts of the CDS spreads caused by national elections is greater for countries with higher political uncertainty and lower investor protections. Also, such relation is mitigated by local political connection and international diversification of business lines. Further, using a difference-in-differences approach, we show that political uncertainty affects individual firms' credit risk through both idiosyncratic volatility and debt rollover channels.

This paper is the first study to examine firm-level credit risk internationally in the context of credit default swap. Our findings reveal the mechanism through which politic affects individual firms' credit risk and call an attention for considering political uncertainty in CDS pricing practices and theory. In addition, our results suggest new thoughts for alleviating the impact of political uncertainty on credit risk, such as enhancing investor protections, expanding business lines in foreign countries, and containing the rollover risk of corporate debts.

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Appendix A.

Variables	Definitions	Data sources
Election Dummy	Election dummy equals one for an election year and zero otherwise.	CLEA, World Bank Author Calculated
Election Type Dummy	Election type dummy equals one for a legislative election and zero otherwise.	CLEA, World Bank Author Calculated
Election Timing Dummy	Election timing dummy equals one for fixed election timing and zero otherwise.	CLEA, World Bank Author Calculated
Legal Origin Dummy	Legal origin dummy equals one for common law and zero otherwise.	La Porta et al. (1998) Author Calculated

Rating Dummy	Rating dummy equals one for a rating greater than or equal to BBB and zero otherwise.	Markit Author Calculated
CDS Depth (CDS Liquidity)	The average number of 5-year CDS quote providers for a single-name contract during a typical time horizon. It is a measure of CDS liquidity and provided by Markit.	Markit
Cash Ratio	The ratio of cash or cash equivalent and total assets.	OSIRIS Author Calculated
Current Ratio	The ratio of current assets over current liabilities.	OSIRIS Author Calculated
Leverage	(Book value of total debts + book value of preferred equity)/Total asset value. The total asset value equals the sum of book value of total debts, book value of preferred equity, and market value of common equity.	OSIRIS Author Calculated
ROA	Return on assets. It equals net income divided by the total value of asset.	OSIRIS Author Calculated
Log asset	The logarithm of total asset value.	OSIRIS Author Calculated
Market to book	Market value of equity divided by the book value of equity.	OSIRIS Author Calculated
Total-Vol	The volatility of monthly equity returns in a year for a firm.	OSIRIS Author Calculated
Sys-Vol	The systematic volatility of monthly equity return. It is the volatility of the explained component of Eq. (6.1).	OSIRIS Author Calculated
Idio-Vol	The idiosyncratic volatility of monthly equity return. It is the volatility of the unexplained component of Eq. (6.1).	OSIRIS Author Calculated
Rollover Risk	The ratio of short-term debt due in 1 year and total firm assets.	OSIRIS Author Calculated
% of Foreign Subs	The percentage of foreign subsidiaries in the total number of firm subsidiaries.	OSIRIC Author Calculated
No. of Foreign Countries	The number for foreign countries in which a firm has subsidiaries.	OSIRIC Author Calculated
PCF	We use Faccio's (2006) definition for politically connected firms. It refers to a firm that is identified as being connected with a politician if at least one of its large shareholders (anyone controlling at least 10% of voting shares) or one of its top officers (CEO, president, vice-president, chairman, or secretary) is a member of parliament, a minister, or closely related to a top politician or party.	Faccio (2006)
Financial Risk Rating	This is a measure of a country's ability to finance its official, commercial, and trade debt obligations.	ICRG
Foreign Debt/GDP	The estimated gross foreign debt in a given year, converted into U.S. dollars at the average exchange rate for that year, is expressed as a percentage of the gross domestic product converted into U.S. dollars at the average exchange rate for that year.	ICRG
Religious Tensions	Stemming from the domination of society and/or governance by a single religious group that seeks to replace secular law with religious law and to exclude other religions from the political and/or social process.	ICRG
Corruption	Corruption within the political system.	ICRG
Democratic Accountability	This is a measure of how responsive a government is to its people, on the basis that the less responsive it is, the more likely the government will fall – peacefully in a democratic society but possibly violently in a non-democratic one.	ICRG
International Liquidity	The total estimated official reserves for a given year, converted into U.S. dollars at the average exchange rate for that year, including official holdings of gold converted into U.S. dollars at the free market price for the period, but excluding the use of IMF credits and foreign liabilities of the monetary authorities, is divided by the average monthly merchandize import cost, converted into U.S. dollars at the average exchange rate for the period.	ICRG
GDP Growth Rate	The annual change of real GDP.	ICRG
Industry Dummies	Based on the industry definition provided by Markit, it categorizes all firms into 10 industries: basic materials, consumer services, consumer goods, energy, healthcare, industrials, technology, telecommunication services, financial service and utilities and governments. We removed the last three sectors from our sample.	Markit Author Calculated
CDS Clause Dummies	There are four types of CDS clauses: Modified-Modified (MM), Modified-Restructuring (MR), No-Restructuring, (XR) and Full-Restructuring (CR).	Markit Author Calculated

Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.jfs.2017.03.006.

References

Acharya, V.V., Johnson, T.C., 2007. Insider trading in credit derivatives. J. Fin. Econ. 84, 110–141.

Alesina, A., Gerald, D.C., Nouriel, R., 1992. Macroeconomic policy and elections in OECD democracies. Econ. Politics 5, 1–30.

Atkeson, A., Eisfeldt, A.L., Weill, P.-O., 2013. The Market of OTC Derivatives, NBER Working Paper 18912, Available at http://www.nber.org/papers/w18912.

Bai, X., Hu, N., Liu, L., Zhu, L., 2017. Credit derivatives and stock return synchronicity. J. Fin. Stabil. 28, 79–90.

Balding, C., 2011. CDS pricing and elections in emerging markets. J. Emerg. Market Fin. 10 (2), 121–173.

Beck, T., Demirgue-Kunt, A., Levince, R., 2003. Law and finance: why does legal origin matter? J. Compar. Econ. 31, 653–675.

Beck, T., Clarke, G., Groff, A., Keefer, P., 2004. New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions, World Bank Policy Research Paper No. 2283.

Bernanke, B.S., 1983. Irreversibility, uncertainty, and cyclical investment. Q. J. Econ. 98, 85–106.

Berndt, A., Ritchken, P., Sun, Z., 2010. On correlation and default clustering in credit markets. Rev. Fin. Stud. 23, 2680–2729.

Bialkowski, J., Gottschalk, K., Wisniewski, T.P., 2008. Stock market volatility around national elections. J. Bank. Fin. 32, 1941–1953.

Boutchkova, M., Doshi, H., Durnev, A., Molchanov, A., 2011. Precarious politics and return volatility. Rev. Financ. Stud. 25 (4), 1111–1154.

Campbell, J.Y., Taksler, G.B., 2003. Equity volatility and corporate bond yields. J. Fin. 6, 2321–2349.

Cao, C., Yu, F., Zhong, Z., 2010. The information content of option-implied volatility for credit default swap valuation. J. Fin. Markets 13, 321–343.

Cao, W., Duan, X., Uysal, V.B., 2013. Does Political Uncertainty Affect Capital Structure Choices, Working Paper, Available at: https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=CICF2014&paper_id=693.

Cargill, T.F., Hutchinson, M.M., 1991. Political business cycles with endogenous election timing: evidence from Japan. Rev. Econ. Stat. 73, 733–739.

Carlson, M., Lazrak, A., 2010. Leverage choice and credit spreads when managers risk shift. J. Fin. 6, 2323–2362.

Chen, H., 2010. Macroeconomic conditions and the puzzles of credit spreads and capital structure. J. Fin. 65 (6), 2171–2212.

Chen, K., Fleming, M., Jackson, J., Li, A., Sarkar, A., 2011, An analysis of CDS transactions implications for publilc reporting, Federal Reserve Bank of New

York Staff Reports. Available at: https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr517.pdf.
Collin-Dufresne, P., Goldstein, R., Martin, J.S., 2001. The determinants of credit spread changes. J. Fin. 56, 2177–2207.
Cloak, G., Durnev, A., Qian, Y., 2013, Political uncertainty and IPO activity: evidence from U.S. Gubernatorial elections, J. Financ. Quant. Anal., Forthcoming.
Cuadra, G., Sapriza, H., 2008. Sovereign default, interest rates, and political uncertainty in emerging markets. J. Int. Econ. 76, 78–88.
Durnev, A., 2010. The Real Effects of Political Uncertainty: Elections and Investment Sensitivity to Stock Prices., http://dx.doi.org/10.2139/ssrn.1549714.
Ericsson, J., Jacobs, K., Oviedo, R., 2009. The determinants of credit default swap premia. J. Fin. Quant. Anal. 44, 109–132.
Faccio, M., 2006. Politically connected firms. Am. Econ. Rev. 96 (1), 369–386.
Faccio, M., Masulis, R.W., Mcconnell, J.J., 2006. Political connections and corporate bailouts. J. Fin. 6, 2597–2635.
Forte, S., Pena, J.I., 2009. Credit spreads: an empirical analysis on the informational content of stocks, bonds, and CDS. J. Bank. Fin. 33, 2013–2025.
Francis, B.B., Hasan, I., Zhu, Y., 2013. The Impact of Political Uncertainty on Institutional Ownership, Discussion Papers. Bank of Finland Research, Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2358419.
Friewald, N., Jankowitsch, R., Subrahmanyam, M.G., 2012. Illiquidity or credit deterioration: a study of liquidity in the U.S. corporate bond market during financial crisis. J. Fin. Econ. 105, 18–36.
Gao, P., Qi, Y., 2013. Political Uncertainty and Public Financing Costs: Evidence from U.S. Gubernatorial Elections and Municipal Bond Markets, Working Paper, Available at: http://www.usc.edu/schools/business/FBE/seminars/papers/F_3-29-13_GAO-Election.pdf.
Han, B., Zhou, Y., 2015. Understanding the term structure of credit default swap spreads. J. Empir. Fin. 31, 18–35.
Han, J., Haozhi, H., Zheyao, P., Guangli, Z., 2015. Economic policy uncertainty and capital structure choice: Evidence from China. Econ. Syst. 39 (3), 439–457.
He, Z., Milbradt, K., 2014. Endogenous liquidity and defaultable bonds. Econometrica 82 (4), 1443–1508.
He, Z., Xiong, W., 2012. Rollover risk and credit risk. J. Fin. 67, 391–429.
Huang, J.-Z., Huang, M., 2012. How much of the corporate-treasury yield spread is due to credit risk? Rev. Asset Pricing Stud. 2, 153–202.
Huang, T., Wu, F., Yu, J., Zhang, B., 2013. Political Uncertainty and Dividend Policy: Evidence from International Political Crises, Working Paper, Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=221248.
Ito, T., 1990. The timing of elections and political business cycles in Japan. J. Asian Econ. 1, 135–156.
Jin, L., Myers, S.C., 2006. R2 around the world: new theory and new tests. J. Fin. Econ. 79 (2), 257–292.
Jorion, P., Zhang, G., 2009. Credit contagion from counterparty risk. J. Fin. 5, 2053–2087.
Julio, B., Yook, Y., 2012. Political uncertainty and corporate investment cycles. J. Fin. 1, 45–83.
Kapadia, N., Pu, X., 2012. Limited arbitrage between equity and credit markets. J. Fin. Econ. 105, 542–564.
Kaviani, S., Kryzanowski, L., Maleki, H., 2014. Policy Uncertainty and Corporate Credit Spreads. Concordia University, Working Paper.
Keefer, P., 2007. Database of Political Institutions: Changes and Variable Definition. Development Research Group, World Bank.
Kelly, B., Pastor, L., Pietro, V., 2016. The price of political uncertainty: theory and evidence from the option market. J. Fin. 71, 2417–2480.
Kryzanowski, L., Perrakis, S., Zhong, R., 2015. Market Power or Limits to Arbitrage in the Credit Default Swap Markets? Theory and Empirical Evidence. Concordia University and Central University of Finance and Economics, Working Paper.
La Porta, R., Silanes, F.L.-d., Shleifer, A., Vishny, R.W., 1998. Law and finance. J. Polit. Econ. 106, 1113–1155.
Leland, H., 1994. Corporate debt value, bond covenants, and optimal capital structure. J. Fin. 49, 1213–1252.
Leland, H., Toft, K., 1996. Optimal capital structure, endogenous bankruptcy and the term structure of credit spreads. J. Fin. 51, 987–1019.
Liu, J., Tang, Y.D., Zhong, R., 2017. CDS Trading and Stock Price Crashes. Central University of Finance and Economics, Working Paper.
Longstaff, F.A., 2010. The subprime credit crisis and contagion in financial markets. J. Fin. Econ. 97, 436–450.
Longstaff, F.A., Mithal, S., Neis, E., 2005. Corporate yield spreads: default risk or liquidity? New evidence from the credit default swap market. J. Fin. 5, 2213–2253.
Mazo, G., 2013. Political Uncertainty, Credit Risk Premium and Default Risk, Working Paper. University of Chicago, Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2376608.
McConnell, J.J., Saretto, A., 2010. Auction failures and the market for auction rate securities. J. Fin. Econ. 97, 451–469.
Merton, R., 1974. On the pricing of corporate debt: the risky structure of interest rates. J. Fin. 29, 449–470.
Morck, R., Yeung, B., Yu, W., 2000. The information content of stock markets: why do emerging markets have synchronous stock price movements? J. Fin. Econ. 58, 215–260.
Norden, L., Weber, M., 2007. The co-movement of credit default swap, bond and stock markets: an empirical analysis. Eur. Fin. Manage. 15, 529–562.
Pastor, L., Veronesi, P., 2012. Uncertainty about government policy and stock prices. J. Fin. 4, 1219–1264.
Pastor, L., Veronesi, P., 2013. Political uncertainty and risk premia. J. Fin. Econ. 110, 520–545.
Peltonen, T.A., Scheicher, M., Vuillemey, G., 2014. The network structure of the CDS market and its determinants. J. Fin. Stabil. 13, 118–133.
Qiu, J., Yu, F., 2012. Endogenous liquidity in credit derivatives. J. Fin. Econ. 103, 611–631.
Tang, D.Y., Yan, H., 2007. Liquidity and Credit Default Swap Spreads, Working Paper. University of South Carolina.
Waisman, M., Pengfei, Y., Zhu, Y., 2015. The effect of political uncertainty on the cost of corporate debt. J. Fin. Stabil. 16, 106–117.
Wisniewski, T.P., Lambe, B.J., 2015. Does economic policy uncertainty drive CDS spreads? Int. Rev. Fin. Anal. 42, 447–458.
Zhang, B.Y., Zhou, H., Zhu, H., 2009. Explaining credit default swap spreads with the equity volatility and jump risks of individual firms. Rev. Fin. Stud. 22, 5099–5131.