Electoral Uncertainty and National Economic Performance

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Abstract: What are the economic consequences of electoral uncertainty? Elections generate uncertainty not only about who will win, but also about who will make policy decisions after the election, what policies will be undertaken, and the effects of future policy changes on real economic outcomes. While existing research documents how elections affect financial asset prices, less is known about the long-run economic consequences of electoral uncertainty. I show that short-run uncertainty about the election outcome has transient effects on financial markets, but long-run election-induced policy uncertainty has persistent effects on real economic activity. I estimate the effect of short- and long-run electoral uncertainty using implied volatility data from equity options markets—a forward-looking measure that captures investor uncertainty over a wide range of time horizons. The results show that elections produce not only short-run market volatility as previously documented, but, more importantly, long-run uncertainty that translates into lower levels of business confidence, private investment, and economic growth. The findings shed light on the impact of political uncertainty on capital allocation and national economic performance.

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1 Introduction

What are the short- and long-run economic consequences of electoral uncertainty? Elections around the world frequently capture the public's attention not only because of which candidate or party won or lost, but also for how financial markets react to elections. In many cases, market jitters begin well before election day, with the post-election reaction reflecting a correction by investors whose expectations proved incorrect. Elections generate uncertainty not only about who will win, but also about who will make policy decisions after the election, what policies will be undertaken, when those changes will be made, and the effects of future policy changes on economic activity. And while policy-induced financial volatility is commonly associated with developing economies, where political institutions are weaker and economic policy is more volatile, election-induced investor uncertainty has been widely documented in developing and developed countries alike, including increased foreign exchange speculation (Eichengreen et al. 1995; Freeman, Hays, and Stix 2000; Leblang 2002; Hays, Freeman, and Nesseth 2003), declines in countries' credit rating (Barta and Johnston 2018; Block and Vaaler 2004; Vaaler, Schrage, and Block 2006), rising interest rates on government debt (Fowler 2006; Santiso 2013; Campello 2015), and heightened volatility in stock and bond markets (Bernhard and Leblang 2006; Bechtel 2009; Jensen and Schmith 2005; Brooks, Cunha, and Mosley 2022).

Existing research has largely focused on the effects of political processes on financial markets, specifically on financial asset prices. That is, most work on financial markets and politics examines how financial investors "price politics." To be sure, understanding the valuation effects of elections is key for understanding how investors' perceptions of political risk are formed and how political information is acquired, processed, and transmitted across markets. However, beyond the financial consequences of political processes, we still know little about how investors' capital reallocation decisions in the face of political uncertainty impact capital investment and economic growth.

Importantly, current research typically does not made a clear distinction between short-

run electoral uncertainty about the election outcome—which is resolved when election results are revealed—and long-run uncertainty about to the effect of elections on future economic policy as well as its attendant consequences for the real economy. The distinction is important because understanding the nature of election-induced uncertainty—whether it consists of short- or long-run uncertainty, or both—is critical for understanding some of the economic consequences of democratic processes. Does electoral uncertainty produce only temporary, short-lived volatility in financial markets or does it have long-lasting adverse effects on national economic performance? This article addresses this shortcoming by examining the extent to which political uncertainty affects not only short-run financial market returns but also long-run outcomes such as private investment and economic growth.

There is considerable evidence that stock market volatility has adverse effects on the real economy. Volatility may damage economic growth, for example, by reducing firm investment and cutting firm spending on research and development. This happens because firms hedge market uncertainty by postponing investment decisions and delaying new hiring (Julio and Yook 2012; Baker, Bloom, and Davis 2016; Barrero, Bloom, and Wright 2017). Indeed, Berger, Dew-Becker, and Giglio (2020) find that stock market volatility tends to be followed by economic contractions. Individuals thus can feel the impact of market turbulence in their pension funds and investment portfolios, while incomes also may suffer directly as hiring and business investment decline (Julio and Yook 2012; Baker, Bloom, and Davis 2016; Kelly, Pástor, and Veronesi 2016). It is therefore well-established that general policy uncertainty is damaging to private investment and economic growth, but does election-induced uncertainty have a similar effect? In other words, do elections produce long-run policy uncertainty in the first place, and does that uncertainty hurt real economic activity?

This study tackles this question by disaggregating the short- and long-run components of election-induced uncertainty using option-implied volatility data from equity options markets for 33 developed and emerging economies between 1996–2020. Compared to the traditional measure of investor uncertainty used in the literature—the historical realized variance of

stock returns—option-implied volatility has the advantage of being an explicitly forward-looking measure of uncertainty, as it is directly derived from market-based expectations about future risks to the underlying stocks. In particular, the implied volatility data allows me to examine election-induced uncertainty over a wide range of investor time horizons. Implied volatility can be estimated using options of different maturities, making it possible to measure expected uncertainty over multiple future durations. I examine the option-implied volatility of broad-based national stock market indices with maturities between 30 days and 2 years, which capture investor uncertainty during electoral periods both in the short and long runs. Critically, these measures make it possible to distinguish between short-run uncertainty during elections and long-run uncertainty about future policy risks that may arise well into the incoming government's term.

The results of the analysis show that both short- and long-run implied volatility are higher during electoral periods compared to non-electoral ones. In fact, the effects of elections on short- and long-run uncertainty are of similar size. Perhaps surprisingly, both close and not very close elections elicit high levels of long-run option-implied volatility, which suggests that much of the policy uncertainty that stems from national elections does not come from the unpredictability of the election outcome itself, but instead from the potential policy consequences of executive turnover. Furthermore, using the within-country variation in option-implied volatility that is predicted by the election cycle, I find that election-induced uncertainty is generally associated with lower levels of private investment, business confidence, and GDP growth. Both short-run and long-run uncertainty adversely affect real economic output, but the negative effect of long-run uncertainty is substantively larger and economically significant. In all, these empirical findings indicate that elections that produce high levels of future policy uncertainty can indeed lead to very damaging consequences for capital accumulation and national economic growth.

The study contributes to the existing research on financial markets and politics in several ways. First, it combines research on elections, financial markets, and economic policy un-

certainty following works such as Bernhard and Leblang (2006), Bechtel (2009), and Sattler (2013). But unlike this research, which examines the impact of political processes and institutions on stock market valuation, I focus on the impact of election-induced uncertainty on the real economy, and how this effect is mediated by market actors' forward-looking perceptions of policy uncertainty. Second, the study builds on and advances over existing research on electoral uncertainty by explicitly disaggregating the effects of elections on short- and long-run investor uncertainty. Existing work has relied on the historical realized volatility of stock prices to measure uncertainty, but, conceptually, realized volatility is not the same as uncertainty about the future, as the former captures not only the dispersion in return expectations but also contemporaneous shocks to policy and real economic activity. In contrast, this study focuses on option-implied volatility as forward-looking measure that captures investor uncertainty over a wide range of time horizons, which is better suited for analyzing long-run policy uncertainty. Finally, the study helps connect the literature on markets and politics with the literature on the structural power of capital. Political scientists have long been deeply interested in how capital owners' ability to "defect" (i.e withhold capital investment) in response to adverse policy developments confers them a privileged position in politics (Lindblom 1977; Hirschman 1978). This study represents a further step in this direction by examining the implications of election-induced policy risk on private investment and economic performance.

2 Elections, Uncertainty, and National Economic Performance

Electoral uncertainty is a common source of volatility and instability in financial markets around the world. Financial investors worry about national elections to the extent that election outcomes can result in policy changes that may affect corporate earnings and returns to capital. When election outcomes are easy to predict, differences between parties generate concerns about future government policies, especially if they portend partisan switches. This is especially likely when partisan shifts are significant (Vaaler, Schrage, and Block

2006; Bernhard and Leblang 2006); when a country has recently undergone a regime transition (Frye 2010); or when elected officials face few institutional constraints (Sattler 2013; Campello 2015). Especially where ideological differences are well defined and political institutions confer incumbents significant policy discretion, investors worry that some left-leaning candidates will implement changes to investment policies, tax rates or public spending, or that left-leaning governments will be less committed to monetary and financial stability and the protection of private property rights (Oatley 1999; Weymouth and Broz 2013).

Nonetheless, elections matter to investors not only when particular parties or candidates are expected to be elected, but also because of the intrinsic uncertainty that they generate. Even seemingly predictable elections often introduce non-negligible unpredictability around the election outcome, the future composition of government, or the future course of economic policy. For this reason, both close and not so close elections frequently trigger volatility in financial markets. Existing research documents, for example, volatility shifts in response to the expected ideological composition of the incoming government (Jensen and Schmith 2005; Leblang and Mukherjee 2005; Bernhard and Leblang 2006; Bechtel 2009; Brooks, Cunha, and Mosley 2022), to uncertainty about electoral outcomes and government survival (Aggarwal, Inclan, and Leal 1999; Freeman, Hays, and Stix 2000; Hays, Freeman, and Nesseth 2003; Slaski 2021), and to commitment problems in economic policymaking arising from the electoral process, such as doubts about whether a government will be willing and able to successfully defend a fixed exchanged rate regime against speculative attacks or maintain monetary stability (Leblang and Bernhard 2000; Leblang 2002).

Uncertainty driven by elections can produce financial market volatility through various mechanisms. First, electoral uncertainty affects the ability of market actors to predict policy outcomes. That is, election-induced uncertainty widens the confidence intervals around investors' policy predictions, as they make room for greater variance in potential outcomes. As such, electoral uncertainty reduces investors' confidence in their own expectations, widening the confidence bands around their forecasts (Leblang and Bernhard 2006; Pástor and

Veronesi 2012; Waisman, Ye, and Zhu 2015). Second, electoral uncertainty broadens the space for disagreement and heterogeneity in expectations among investors. Under heightened uncertainty, individual investors may interpret political events or assess risk differently, often taking opposite positions in the market (Xiong and Yan 2010; Atmaz and Basak 2018). Finally, volatility may stem from a shift towards more short-term trading. When election outcomes and policy consequences are uncertain, even otherwise minor news can easily shift investors' beliefs about the future, especially those beliefs about the risk of bad outcomes (Bittlingmayer 1998), which may result in more volatile trading behavior and higher price variance (Gallant, Rossi, and Tauchen 1992; Mukherjee and Leblang 2007).

Yet, although the "market responses to elections" literature has made much progress in understanding how financial markets price political risk and uncertainty, less is known about whether and how electoral uncertainty affects real economic outcomes, such as investment and growth. Understanding how political uncertainty affects real economic activity is key for understanding how markets interact with politics. For one, it should provide important insights into how "market defection" (i.e. exit) by capital owners may serve as a source of structural power. Existing research has typically focused on foreign capital flight, or the implicit threat thereof, as the main mechanism through which capital owners can obtain leverage and exert influence over national economic and political choices (Andrews 1994; Mosley 2003; Campello 2015; Kaplan and Thomsson 2016). Nonetheless, even less-than-perfectly-mobile capital may defect when faced with political uncertainty, as private firms withhold or delay investment and hiring decisions to hedge the accompanying risks. Therefore, better understanding the effects of electoral uncertainty on real economic activity should give us insight into a key mechanism in the interaction between markets and politics.

2.1 Short- and Long-Run Electoral Uncertainty and Economic Performance

Does electoral uncertainty affect long-run economic performance? Existing research has largely focused on the effects of political processes on financial markets, specifically on asset

prices. In other words, this work investigates how markets "price politics" (Bernhard and Leblang 2006; Sattler 2013; Bechtel 2009; Brooks, Cunha, and Mosley 2022). Beyond the financial consequences of political processes, however, we still know little about how investors' capital reallocation decisions in the face of political uncertainty impact productive investment and economic growth. Surely, democratic processes affect financial asset valuation, but do these election-induced valuation effects translate into changes to real economic output?

Critical for understanding the potential real economic effects of elections is distinguishing between short-run and long-run election-induced uncertainty. While short-run uncertainty is likely to make financial markets more volatile, it is long-run uncertainty that has the potential to deter productive investment and slow down economic growth. Short-run electoral uncertainty corresponds to the degree of unpredictability of events that can take place throughout the electoral process itself and its immediate aftermath. Short-run electoral volatility can begin well before election day and bleed into the post-election process of government formation in certain cases. This type of election-induced financial volatility reflects uncertainty about who the winning candidate or party will be, the composition and stability of the incoming governing coalition, the cabinet's composition, and who will make policy decisions after the election. The effects of short-term electoral uncertainty are widely documented and tend to manifest themselves in the form of high asset price variance just before and just after elections (Freeman, Hays, and Stix 2000; Hays, Freeman, and Nesseth 2003; Bernhard and Leblang 2006). In addition, political business cycles can also lead to short-term volatility around elections. Elections might prompt incumbents to engage in opportunistic fiscal or monetary expansion aimed at improving pre-electoral economic conditions (Clark and Hallerberg 2000). In this case, market volatility could reflect not only uncertainty over the election outcome, but also real policy shocks that correlate with the electoral cycle (Vaaler, Schrage, and Block 2006).

In contrast, long-run election-induced uncertainty may lead to changes in real economic activity in addition to its effects on financial asset valuations. Political predictability is

crucial in order to create an environment beneficial for investment and growth. Elections can puncture this predictability by creating long-run uncertainty over whether there will be meaningful changes to the ideological make-up of the government, whether these changes will affect economic policy, what policies will be undertaken, when those changes will be made, and how those future policy changes will affect economic activity. Therefore, to the extent that elections can introduce uncertainty over policy and economic performance in the long run, they can have adverse effects on private sector investment decisions.

The link between policy uncertainty and economic performance is straightforward and well-documented. Multiple studies have established that uncertainty over monetary, fiscal, and regulatory policies can have detrimental effects on economic activity (Baker, Bloom, and Davis 2016; Kelly, Pástor, and Veronesi 2016; Hassett and Metcalf 1999; Rodrik 1991; Bernanke 1983). Rodrik (1991), for example, shows formally that even moderate amounts of policy uncertainty can act as a tax on investment. In fact, even policy changes that otherwise might be conducive to private investment might end up being detrimental if there is doubt about their permanence. Barrero, Bloom, and Wright (2017) provide firm-level evidence that corroborates these predictions. They find that US firms' expenses on R&D, hiring, and investment are sensitive to long-run policy uncertainty, which may be particularly damaging to growth. Similarly, Bachmann, Elstner, and Sims (2013) use survey-based measures of business-level uncertainty to show that uncertainty leads to reductions in production in Germany and the United States. Using an index of economic policy uncertainty based on newspaper coverage, Baker, Bloom, and Davis (2016) also document that at the firm level, economic policy uncertainty corresponds with greater stock price volatility and lower investment and employment, whereas at the macro level, policy uncertainty shocks predict declines in investment, output, and employment across the world's major economies. Finally, in addition to the wait-and-see effect whereby private agents delay investment and hiring until uncertainty is resolved, uncertainty can also affect real economic activity by increasing the cost of finance for private firms (Gilchrist, Sim, and Zakrajšek 2014). And

while policy-induced volatility is commonly associated with developing economies, it also can occur in developed country asset markets, as it did after the 2007-8 Global Financial Crisis (Bachmann, Elstner, and Sims 2013; Berger, Dew-Becker, and Giglio 2020).

It is therefore well established that general policy uncertainty is damaging to private investment and economic growth, but does election-induced policy uncertainty have a similar effect? In other words, do elections produce long-run policy uncertainty in the first place, and does that uncertainty hurt real economic activity? On the one hand, it is possible that elections may lead only to temporary, short-term volatility in financial markets. If investors do not believe that elections are likely to have a long-lasting impact on the future course of economic policy, particularly in ways that are detrimental to corporate earnings and investment returns, then one should expect localized market jitters around the election date with consequences for financial asset valuations but no discernible impact on real economic outcomes. This would be the case if elections only produce short-run economic uncertainty but no long-run policy uncertainty—in which case the elicited market response would capture investors' hedging against temporary, short-lived turbulence in financial markets in the immediate pre-electoral and post-electoral periods.

On the other hand, if elections indeed raise distinct types of uncertainty—both short-run uncertainty about the winner and long-run uncertainty about the future course of economic policy—then theoretically one could expect long-run and short-run electoral uncertainty to have different effects on national economic performance. At one extreme, one could expect long-run, but not short-run, uncertainty to have an adverse effect on investment and growth. Alternatively, if elections do elicit policy uncertainty over various time horizons, then one could expect electoral uncertainty to have a combination of effects on economic performance, with longer-run uncertainty having larger effects than shorter-run uncertainty. In either case, one should expect long-run policy uncertainty to reduce the rate of growth in real economic output, as economic agents cope with excessive uncertainty by holding off on production, investment, and hiring decisions until the uncertainty is resolved.

3 Data and Empirical Strategy

3.1 Uncertainty and Stock Market Implied Volatility

The main empirical challenge in studying the economic effects of political uncertainty is capturing election-induced market uncertainty. Existing research relies on the realized volatility of financial asset prices—that is, the temporal variance of stock prices, exchange rates, and interest rates, for example—as a proxy for uncertainty. Indeed, financial volatility as captured by the temporal variance of asset prices is a commonly market-based measure of uncertainty (Berger, Dew-Becker, and Giglio 2020; Bernhard and Leblang 2006; Datta et al. 2017; Leblang and Mukherjee 2005; Bechtel 2009). The variance of asset prices is conventionally interpreted as capturing investors' relative confidence in or disagreements over expectations about future changes in economic fundamentals. Higher volatility reflects investors' higher uncertainty about future returns, while lower volatility indicates lower uncertainty.

However, measuring uncertainty as the realized volatility of asset prices is not without problems. Conceptually, realized volatility is not the same as uncertainty about the future. Uncertainty refers to variation in subjective expectations of future events, while realized volatility in asset prices better captures the variance of past and present economic shocks (Berger, Dew-Becker, and Giglio 2020). The realized volatility of stock market returns, therefore, has an indirect and imperfect connection to the notion of forward-looking uncertainty. Furthermore, realized volatility contains no explicit information on the time horizon over which investors feel uncertain and tends to capture short-run uncertainty better than long-run uncertainty. Therefore, it likely misses variation in more consequential, long-run uncertainty shocks.

To address this challenge, I use data on option-implied volatility as an empirical measure that can distinguish between short- and long-run forward-looking uncertainty. Implied volatility is calculated by taking stock option trading prices and inferring what level of volatility in the value of the underlying stocks would result in the observed option prices, typically

using an option pricing model (e.g. the Black-Scholes formula (Black and Scholes 1973)). Implied volatility is considered a forward-looking measure of uncertainty because it is explicitly derived from market-based expectations about future return shocks to the underlying stocks. The VIX index, for example, published by the Chicago Board of Options Exchange, is a well-known benchmark index of the 30-day implied volatility of the S&P 500 index, and it is typically used as a forward-looking measure for short-run economic uncertainty in the US stock market. A rich literature has looked to options markets and corresponding measures of implied volatility in an effort to understand the nature and sources of uncertainty for investors, as well as its economic effects. Kelly, Pástor, and Veronesi (2016), for instance, find that implied volatility is especially high before political events such as global summits and elections. Others have found that high implied volatility is associated with lower levels of firm R&D and investment (Barrero, Bloom, and Wright 2017).

The critical feature of implied volatility data is that they allow one to measure forward-looking market uncertainty over a wide range of time horizons. Implied volatility can be estimated using options with multiple maturities, making it possible to measure expected uncertainty over multiple durations. To analyze short- and long-run election-induced uncertainty, I use data on implied volatility obtained from OptionMetrics for the main broad-based stock market index of each country in the sample. The implied volatility data are available from 1996 onwards and the temporal coverage varies by country. The sample includes 33 developed and emerging economies. Table A1 shows the geographic and temporal coverage of the sample of equity implied volatility, including the stock index underlying the country's options and the start and end dates for the available data. While options for individual corporate shares can be traded with maturities of up to ten years, the longest maturity for traded options on broad-based national stock market indexes tends to be 2 years. Therefore, I use implied volatility for standardized options with maturities from 30 days to as long as 2 years, which capture investor risk assessments both in the very short and in the long run. This allows me to distinguish between the short-run effect of elections on markets from their

effect on long-run economic policy uncertainty.

3.2 Capturing Election-Induced Short- and Long-Run Uncertainty

In the first part of the analysis, I determine which type of uncertainty elections generate. Of central importance is determining whether there is variation in market responses to elections at short and long time horizons. If elections only produce short-run uncertainty as markets await news on the election's outcome, then it means that market volatility throughout electoral periods is unlikely to have significant economic consequences. If, on the other hand, elections also cause upward shifts in long-run market uncertainty, then this provides initial evidence that electoral uncertainty may have broader, longer-lasting effects on future economic performance.

For this test, I create a time-series cross-sectional dataset that combines implied volatility data with maturities of 30 days, 6 months, 1 year, and 2 years with data on the timing of national elections. Election dates are obtained from the National Elections Across Democracy and Autocracy dataset (Hyde and Marinov 2012), from which I select only those national elections in which the office of the incumbent was contested. This includes presidential elections in presidential systems and general parliamentary elections in parliamentary systems. The sample spans a total of 87 elections in 33 countries—an average of 2.6 elections per country.

Figure 1 depicts the typical behavior of stock market implied volatility around national elections in the sample. The data shows that the median cross-country implied volatility on the main broad-based national stock market indexes increases significantly in the year preceding the election. Implied volatility typically shifts upward around 200 trading days before the election ($\sim$ 9 calendar months) and remains high throughout the electoral year, only returning to normal levels once uncertainty over the outcome is realized. This pattern is in line with theoretical expectations regarding the electoral sources of ex ante uncertainty over potential leadership turnover and its attendant consequences for economic policy. Remarkably,

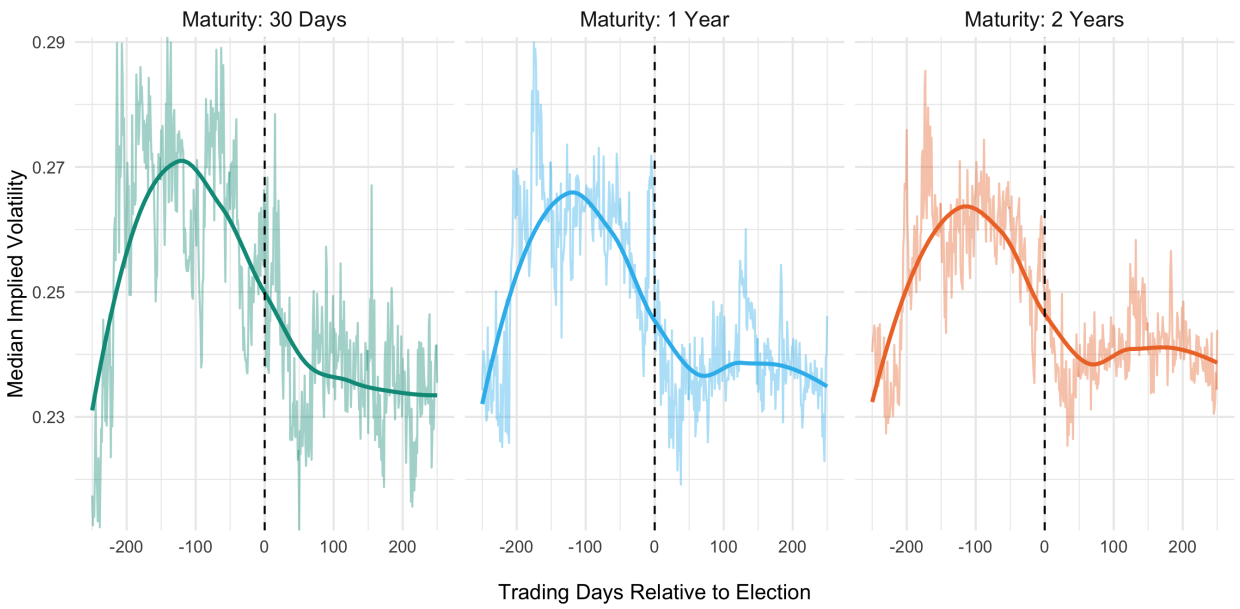

Figure 1. Median implied volatility around national elections.
Notes: Figure shows median implied volatility across elections by day relative to the election day, with fitted loess curve.

elections not only generate short-term market uncertainty over the election outcome, but, importantly, they also produce long-term economic uncertainty as captured by the marked increase in 1- and 2-year implied volatility in the run-up to the election. For the typical election in the sample, therefore, election-induced uncertainty is high enough to prompt financial investors to hedge against long-run policy risks.

However, the amount of election-induced uncertainty may vary as a function of how competitive and unpredictable an election is. That is, close elections may produce higher ex ante uncertainty than non-close elections and therefore elicit greater market volatility. Figure 2 shows the median implied volatility around the election date by election closeness. Closeness is measured using the margin of victory for the winning candidate over the runner-up. The close election dummy is coded one if the margin is equal to or less than 5 percentage points, and zero otherwise. Overall, both close and not so close elections are preceded by increased short- and long-run implied volatility. Maybe surprisingly, although close elections seem to generate higher levels of long-run implied volatility than non-close ones, the difference

is small and the pattern of market behavior is very similar around both types of elections. The data thus suggests that a large portion of the financial uncertainty stemming from elections cannot be explained by the unpredictability of the election outcome alone; rather, even relatively predictable elections seem to generate long-run uncertainty due the potential policy consequences of executive turnover.

I formally assess the short- and long-run effects of elections using the following model specification:

$$log(IVOL_{i,t,m}) = \alpha_i + \sum_{\tau=T_1}^{T2} \beta_\tau Election_{\tau,i,t} + \varepsilon_{i,t,m} \tag{1}$$

where $log(IVOL_{i,t,m})$ is the natural log of the implied volatility of country index i in time t with maturity m in $30, 182, 365, 730$ (30 days, 6 months, 1 year, and 2 years); α_i are country fixed effects; $Election_{\tau,i,t}$ are dummy variables coded one for time period $t = \tau$ in the electoral window and zero otherwise, for $\tau = T_1, T_1+1, \ldots, T_2$; and $\varepsilon_{i,t,m}$ is an error term. The election window, $T_1 \leq \tau \leq T_2$, is specified as the period ranging from 12 months before to 12 months after the election, with dummies for each month in that period. The event study-like nature of the design flexibly captures potential heterogeneity and non-linearities in pre- and post-election market uncertainty.

3.3 Real Economic Effects of Election-Induced Uncertainty

The second part of the analysis examines determine the effect of short- and long-run electoral uncertainty on national economic performance. The analysis involves estimating the empirical relationship between indicators of real economic activity and election-induced short- and long-run uncertainty. If elections indeed raise distinct types of uncertainty—short-run uncertainty about the winner and long-run uncertainty about the future course of economic policy—then theoretically one could expect long-run and short-run electoral uncertainty to have different effects on national economic performance. At one extreme, one could expect that long-run, but not short-run, uncertainty should have large negative effects on economic

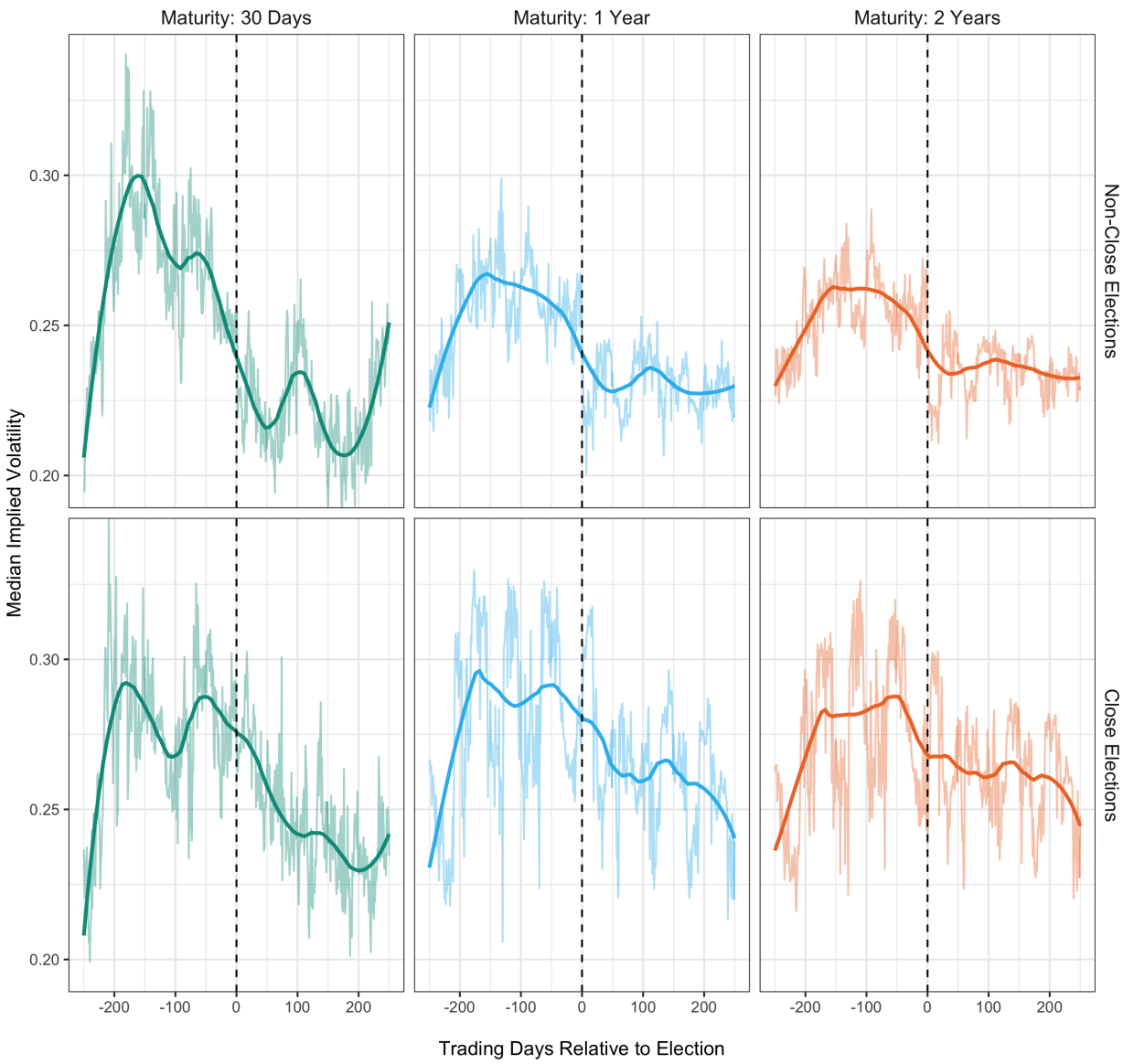

Figure 2. Median implied volatility around close and non-close elections.
Notes: Figure shows median implied volatility across elections by day relative to the election day, with fitted loess curve. Elections are coded as close if the margin of victory is 5 percentage points or less, and non-close otherwise.

performance, if short-run implied volatility simply captures investors' hedging against temporary and short-lived turbulence in financial markets during election time. Alternatively, if implied volatilities of different duration indeed imply differences in the uncertainty horizon of investors, then one could also expect long-run election-induced uncertainty to have a larger impact on economic performance than short-run uncertainty. Long-run political uncertainty

should be observed when elections raise considerable uncertainty over the future course of economic policy, in which case economic agents are likely to cope with excessive uncertainty by holding off on investment and hiring decisions until that uncertainty is resolved.

To estimate the effect of election uncertainty on national economic performance, I employ a two-stage estimation strategy. In the first stage, short- and long-run implied volatility is predicted based on election cycles; in the second stage, indicators of real economic activity are then regressed on the election-predicted values of short- and long-run implied volatility:

$$log(IVOL_{i,t,m}) = \alpha_i + \sum_{\tau=T_1}^{T2} \beta_\tau Election_{\tau,i,t} + \varepsilon_{i,t,m} \tag{2}$$

$$Y_{i,t} = \eta_i + \gamma_m log(\widehat{IVOL}_{i,t,m}) + \epsilon_{i,t,m} \tag{3}$$

where Equation 2 represents the first stage and Equation 3 describes the second stage; $Y_{i,t}$ stands for different indicators of economic activity—including GDP growth (quarterly), business confidence (monthly), and private investment (quarterly); and $log(\widehat{IVOL}_{i,t,m})$ represents the predicted implied volatility from the first-stage model. The latter term captures the variation in investor uncertainty that is predicted by the election cycles and, as such, can be interpreted as a measure of "excess electoral uncertainty." The first-stage election dummies include the 4 quarters before and the 4 quarters after an election when using quarterly economic data and 12 months before and after an election when using monthly economic data.

The main outcome variable in the second stage is GDP growth, measured quarterly on an annualized basis using data from the IMF's *International Financial Statistics*. Additionally, I test the purported mechanism by examining the effect of excess electoral uncertainty on private economic expectations and investment decisions. First, using the above two-stage specification, I estimate the effect of short- and long-run uncertainty on business confidence using the OECD's monthly survey-based indicator. The business confidence index captures

the degree of optimism or pessimism that business managers in the industry sector feel about the prospects of their companies, based upon opinion surveys on developments in production, orders, and stocks of finished goods. As an expectations-based, prospective measure of confidence, it is particularly well-suited for assessing whether and how electoral uncertainty affects economic output through its effects on the economic expectations of private agents. Second, I examine the effect of electoral uncertainty on private investment as the main channel through which uncertainty is expected to affect aggregate economic output. Private investment, as a long-run economic decision by private agents, should respond more strongly to long-run uncertainty than short-run uncertainty. I use growth in gross capital formation as a proxy for private investment, measured quarterly on an annualized basis using data from the IMF's *International Financial Statistics*. Gross capital formation is measured by the total value of a producer's acquisitions of fixed assets, including, among others, land improvements, plant, machinery, and equipment purchases, and the construction of commercial and industrial buildings. The measure therefore directly captures variation in the private investment decisions that drive long-run economic growth.

Given the focus on election-induced uncertainty cycles, an important characteristic of national elections is whether the timing of the election is exogenously determined by the electoral system. Under some electoral systems, governments can be dissolved before the end of its full term and an election is then called to form a new government. This can introduce complications in the interpretation of the empirical results to the extent that the timing of elections may be endogenously related to the country's economic performance. For one, governments may opportunistically choose the timing of elections to coincide with periods of high economic growth, thus improving its chances of reelection. Alternatively, economic turbulence may precipitate early elections by reducing the support base of the incumbent government. To deal with this possible source of endogeneity, I conduct all analyses using both the full sample of elections and a subsample of exogenously timed elections. I identify countries with exogenously timed elections using criteria similar to Julio and Yook (2012).

First, I include all countries with a presidential system, as in those cases the executive is not politically dependent on the legislature and executive elections are the main mechanism for regular executive turnover. For those countries with a parliamentary system, all countries with a record of early or late elections according to the NELDA dataset (Hyde and Marinov 2012) are coded as having endogenously timed elections. The remaining cases of parliamentary systems with no record of early elections are adjudicated using codings from Julio and Yook (2012). The resulting indicator identifies countries with fixed and those with flexible (and thus possibly endogenous) election timing.

4 Results

Table 1 shows within-country regression estimates of daily stock market implied volatility on dummies capturing the election cycle in countries with exogenously timed elections. The results show that implied volatility is significantly higher in the run-up to elections compared to non-electoral periods. Across stock index options of various durations, implied volatility significantly increases beginning 10 months before the election and remains high until the election month. Interestingly, longer-maturity implied volatility (from 6 months to 2 years) is considerably higher during the election month itself, but the same is not observed for 30-day implied volatility. In contrast, there is no clear shift in volatility in the months immediately following an election. Table A2 shows similar results for the full sample of countries, including those with flexible election timing. In general, the effects are larger for exogenously timed elections than in the full sample, which assuages concerns that endogenous election timing might confound the results.

Importantly, these results show that elections produce not only short-run uncertainty, but also and more importantly long-run uncertainty over future economic performance. Note that 1- and 2-year option-implied volatility is significantly higher in the few months preceding the election, which implies that during elections financial investors hedge against not only temporary market turbulence driven by electoral process itself, but especially against future

Table 1. Elections and Stock Market Implied Volatility

	Sample: Fixed Term Elections			
	Dependent Variable: Implied Volatility			
	30 Days	*6 Months*	*1 Year*	*2 Years*
	(1)	(2)	(3)	(4)
Election Month – 12	−0.089*	−0.078**	−0.065*	−0.062**
	(0.051)	(0.036)	(0.035)	(0.028)
Election Month – 11	0.023	−0.022	−0.076***	−0.091***
	(0.053)	(0.036)	(0.026)	(0.025)
Election Month – 10	0.332***	0.220***	0.131***	0.066**
	(0.069)	(0.048)	(0.038)	(0.028)
Election Month – 9	0.242***	0.178***	0.171***	0.123***
	(0.062)	(0.044)	(0.052)	(0.043)
Election Month – 8	0.146**	0.118***	0.095**	0.078**
	(0.057)	(0.041)	(0.037)	(0.031)
Election Month – 7	0.156***	0.110**	0.084**	0.066**
	(0.053)	(0.041)	(0.032)	(0.027)
Election Month – 6	0.129**	0.113**	0.114**	0.101***
	(0.053)	(0.041)	(0.042)	(0.034)
Election Month – 5	0.107*	0.108**	0.098**	0.086**
	(0.052)	(0.043)	(0.044)	(0.037)
Election Month – 4	0.127***	0.126***	0.083*	0.077**
	(0.041)	(0.034)	(0.041)	(0.035)
Election Month – 3	0.093**	0.105***	0.105**	0.094**
	(0.039)	(0.033)	(0.043)	(0.039)
Election Month – 2	0.053	0.074	0.065	0.057
	(0.047)	(0.043)	(0.042)	(0.035)
Election Month – 1	0.035	0.044	0.020	0.017
	(0.042)	(0.037)	(0.038)	(0.032)
Election Month	0.070	0.113**	0.159***	0.146***
	(0.041)	(0.045)	(0.056)	(0.049)
Election Month + 1	0.005	0.006	−0.029	−0.030
	(0.073)	(0.059)	(0.054)	(0.049)
Election Month + 2	−0.043	−0.045	−0.029	−0.022
	(0.065)	(0.055)	(0.059)	(0.050)
Election Month + 3	−0.099	−0.058	−0.043	−0.026
	(0.059)	(0.045)	(0.053)	(0.046)
Election Month + 4	−0.088	−0.046	−0.083*	−0.063
	(0.054)	(0.047)	(0.047)	(0.041)
Election Month + 5	−0.013	−0.023	−0.019	−0.022
	(0.054)	(0.046)	(0.048)	(0.040)
Election Month + 6	−0.040	−0.042	−0.017	−0.016
	(0.061)	(0.048)	(0.049)	(0.039)
N	45823	45473	34725	34712
Countries	20	20	20	20

Table shows fixed effects estimates with standard errors clustered by country in parentheses. The unit of analysis is the country-day. The dependent variable is the daily equity implied volatility (logged). All models include country fixed effects. $^{*}p < 0.1$,$^{**}p < 0.05$,$^{***}p < 0.01$.

economic risks that may arise far into the next government's term. It is precisely this form of long-run policy uncertainty that standard economic models suggest should deter real capital formation by affecting long-term private investment decisions. These results also validate the forward-looking nature of option-implied volatility as a measure of uncertainty. As market participants seek to hedge against ex ante uncertainty in anticipation of elections, the price of long-duration options rises significantly, but demand for these hedging instruments subsides once that uncertainty is resolved.

To assess the real long-term effects of electoral uncertainty, Table 2 shows two-stage least squares regression estimates of national economic growth. The second-stage estimates represent the effect of short- and long-run implied volatility as predicted by electoral cycles on quarterly GDP growth. The coefficients on implied volatility are negative, large, and statistically significant for all durations both in the full sample and for elections with fixed timing. However, the effect of election-induced long-run uncertainty on GDP growth is considerably larger than the effect of short-run uncertainty. For instance, when considering only exogenously timed elections, model 5 in Table 2 implies that an increase in the (logged) 30-day implied volatility by one standard deviation ($sd = 0.194$) corresponds with a decline in GDP growth equal to 45% of one standard deviation ($sd = 3.91$, $\Delta = -1.78$). In comparison, model 8 indicates that an increase in the (logged) 2-year implied volatility by one standard deviation ($sd = 0.145$) corresponds with a decline in GDP growth equal to 87% of one standard deviation ($\Delta = -3.40$). These estimates suggest an economically substantive impact of long-run election-induced uncertainty on growth.

Mechanisms. The key mechanism through which electoral uncertainty is expected to affect national economic performance is through its effects on private investment decisions. To assess the mechanism, I examine the effect of election-induced implied volatility on business confidence and private investment growth. Table 3 shows two-stage least squares regression estimates of business confidence using OECD's survey-based confidence indicator as the dependent variable, which captures business managers' degree of optimism or pessimism about

Table 2. Election-Induced Uncertainty and GDP Growth

	2SLS			
	Dependent Variable: GDP Growth			
	Full Sample			
	(1)	(2)	(3)	(4)
$\widehat{\text{30-Day Impl.Vol.}}$	−8.568***			
	(1.802)			
$\widehat{\text{6-Month Impl.Vol.}}$		−14.119***		
		(3.256)		
$\widehat{\text{1-Year Impl.Vol.}}$			−17.449***	
			(4.223)	
$\widehat{\text{2-Year Impl.Vol.}}$				−28.233***
				(8.675)
N	1335	1331	1327	1324
Countries	33	33	33	33
	Fixed Term Only			
	(5)	(6)	(7)	(8)
$\widehat{\text{30-Day Impl.Vol.}}$	−8.733***			
	(1.502)			
$\widehat{\text{6-Month Impl.Vol.}}$		−12.173***		
		(2.382)		
$\widehat{\text{1-Year Impl.Vol.}}$			−15.449***	
			(3.325)	
$\widehat{\text{2-Year Impl.Vol.}}$				−22.301***
				(5.956)
N	741	737	733	731
Countries	20	20	20	20

Two-stage least squares estimates with standard errors clustered by country in parentheses. The unit of analysis is the country-quarter. The dependent variable is annualized quarterly GDP growth. All models include country fixed effects. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

the prospects for their companies. The business confidence index is particularly useful for testing this mechanism because it is often employed as a leading indicator of turning points in economic activity. The coefficients on implied volatility are negative and statistically significant for all durations both in the full sample and in the subsample of exogenously timed elections, indicating that election-induced uncertainty tends to lower business managers' confidence in the economy. For example, model 1 in Table 3 suggests that an increase in the (logged) 30-day implied volatility by one standard deviation corresponds with a decline in the business confidence index equal to 33% of one standard deviation ($sd = 1.78$, $\Delta = -0.59$). When it comes to longer-run uncertainty, model 4 indicates that an increase in the (logged) 2-year implied volatility by one standard deviation corresponds with a decline in business confidence equal to 43% of one standard deviation ($\Delta = -0.76$).

While business confidence is helpful for capturing how elections affect private agents' sense of economic optimism or pessimism, economic growth ultimately responds to private investment decisions. Therefore, Table 4 shows two-stage least squares regression estimates of quarterly gross capital formation, which is conventionally used as a proxy for aggregate private investment. In the full sample of countries, the coefficients on the fitted implied volatilities of all durations are negative, large, and statistically significant at the 5% level. In the subsample of elections with fixed timing, the coefficients are also negative, but only the coefficient on 2-year implied volatility is significant at that level, while the remaining ones are significant at the 10% level. Nonetheless, the effect sizes are comparable across both samples. The results show that electoral uncertainty, especially of the long-run variety, has an economically substantive impact on private investment. For example, considering only exogenously timed elections, model 5 in Table 4 implies that an increase in the (logged) 30-day implied volatility by one standard deviation is associated with a decline in investment growth equal to 15% of one standard deviation ($sd = 11.64$, $\Delta = -1.77$), whereas model 8 suggests that an increase in the (logged) 2-year implied volatility by one standard deviation is associated with a decline in investment growth equal to 34% of one standard deviation

Table 3. Election-Induced Uncertainty and Business Confidence

	2SLS			
	Dependent Variable: Business Confidence Index			
	Full Sample			
	(1)	(2)	(3)	(4)
$\widehat{\text{30-Day Imp.Vol.}}$	−2.793**			
	(1.030)			
$\widehat{\text{6-Month Imp.Vol.}}$		−4.014***		
		(1.208)		
$\widehat{\text{1-Year Imp.Vol.}}$			−4.865***	
			(1.091)	
$\widehat{\text{2-Year Imp.Vol.}}$				−5.215***
				(1.131)
N	3171	3159	2444	2443
Countries	26	26	26	26
	Fixed Term Only			
	(5)	(6)	(7)	(8)
$\widehat{\text{30-Day Imp.Vol.}}$	−3.160**			
	(1.159)			
$\widehat{\text{6-Month Imp.Vol.}}$		−3.977**		
		(1.522)		
$\widehat{\text{1-Year Imp.Vol.}}$			−4.531**	
			(1.633)	
$\widehat{\text{2-Year Imp.Vol.}}$				−4.218**
N	1653	1642	1230	1229
Countries	15	15	15	15

Two-stage least squares estimates with standard errors clustered by country in parentheses. The unit of analysis is the country-month. The dependent variable is the monthly OECD business confidence index. All models include country fixed effects. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

($\Delta = -3.92$).

Placebo test. The analysis focuses on business confidence and private investment decisions as the key channel through which electoral uncertainty affects national economic performance. In Table A3, I present results that focus instead on government spending as the outcome, which serves as a placebo test. The purpose of a placebo test is to demonstrate that an effect does not exist when it "should not" exist. Both GDP growth and government spending may jointly follow economic and political business cycles. For one, elections might prompt incumbents to engage in opportunistic fiscal expansion aimed at improving pre-electoral economic conditions (Clark and Hallerberg 2000). Moreover, GDP growth and government spending share much common variation where fiscal policy has either a pro-cyclical or a countercyclical component (Fatás and Mihov 2013). However, the electoral uncertainty mechanism that I focus on is limited to private economic activity and thus should not directly affect public spending.

Using quarterly government spending growth on an annualized basis as the second-stage outcome, I replicate the base model represented in Equations 2-3 using both the full sample and the subsample of countries with exogenously timed elections. In both samples, the effects are not statistically significant and they are substantively negligible compared to the estimated effects for GDP and private investment growth.

Heterogeneity across developed and emerging economies. Do the effects of short- and long-run electoral uncertainty vary across developed and emerging economies? How much electoral uncertainty impacts economic performance may depend both on how much electoral uncertainty a political system endemically produces as well as the country's level of economic development. For one, emerging markets are typically associated with higher levels of political uncertainty due to, among other factors, lower levels of party system institutionalization, weaker executive constraints, lower government transparency, weaker property rights protections, and greater policy discretion. This combination of factors could lead one to expect more adverse economic consequences from electoral uncertainty in developing nations.

Table 4. Election-Induced Uncertainty and Private Investment

	2SLS			
	Dependent Variable: Gross Capital Formation			
	Full Sample			
	(1)	(2)	(3)	(4)
30-Day $\widehat{\text{Impl.Vol.}}$	−9.260**			
	(3.974)			
6-Month $\widehat{\text{Impl.Vol.}}$		−15.825**		
		(6.525)		
1-Year $\widehat{\text{Impl.Vol.}}$			−19.114**	
			(7.860)	
2-Year $\widehat{\text{Impl.Vol.}}$				−30.595**
				(13.289)
N	1339	1335	1331	1328
Countries	33	33	33	33
	Fixed Term Only			
	(5)	(6)	(7)	(8)
30-Day $\widehat{\text{Imp.Vol.}}$	−7.738*			
	(4.281)			
6-Month $\widehat{\text{Imp.Vol.}}$		−11.116*		
		(6.136)		
1-Year $\widehat{\text{Imp.Vol.}}$			−15.412*	
			(7.662)	
2-Year $\widehat{\text{Imp.Vol.}}$				−24.721**
				(11.284)
N	745	741	737	735
Countries	20	20	20	20

Two-stage least squares estimates with standard errors clustered by country in parentheses. The unit of analysis is the country-quarter. The dependent variable is annualized quarterly growth in gross capital formation. All models include country fixed effects. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Indeed, existing research finds that political uncertainty produces high levels of financial volatility in the emerging world (Leblang 2002; Hays, Freeman, and Nesseth 2003; Campello 2015; Brooks, Cunha, and Mosley 2022). Yet, plenty of evidence indicates that electoral uncertainty in developed economies can also lead to considerable financial market turbulence (Bernhard and Leblang 2006; Bechtel 2009; Sattler 2013) as well as declines in real economic output (Byrne and Philip Davis 2005; Julio and Yook 2012; Berger, Dew-Becker, and Giglio 2020; Barrero, Bloom, and Wright 2017).

Figure 3 compares estimation results for the subsamples of advanced and emerging economies. The effects of short-run electoral uncertainty (30-day implied volatility) are virtually the same in emerging and developed countries across all three outcomes—GDP growth, business confidence, and private investment. Overall, estimates for longer-run uncertainty shocks are also very similar across the two groups of countries. The largest differences across groups are found for the effect of 2-year implied volatility: the effect on GDP growth and private investment appears to be larger for emerging than developed countries, while the effect on business confidence seems to be larger for developed countries. Nonetheless, overall the subgroup effects for emerging markets are estimated with much uncertainty and we cannot confidently determine whether the effects are indeed different across subgroups.

Measurement validity. The empirical strategy focuses on measuring election-induced economic uncertainty as the component of the variation in short- and long-run stock market implied volatility that is predicted by election cycles. This strategy has the advantage of explicitly distinguishing between short- and long-run uncertainty, but there could be concerns that option-implied volatility might capture things other than ex ante electoral uncertainty, such as volatility in real economic shocks during the electoral period. Table A4 shows country-by-country regressions of stock market implied volatility on country-level economic policy uncertainty using the Baker, Bloom, and Davis (2016) index of economic policy uncertainty (EPU). This text-based index measures the frequency of articles in countries' leading newspapers that contain terms related to economic policy uncertainty. Overall, the country-

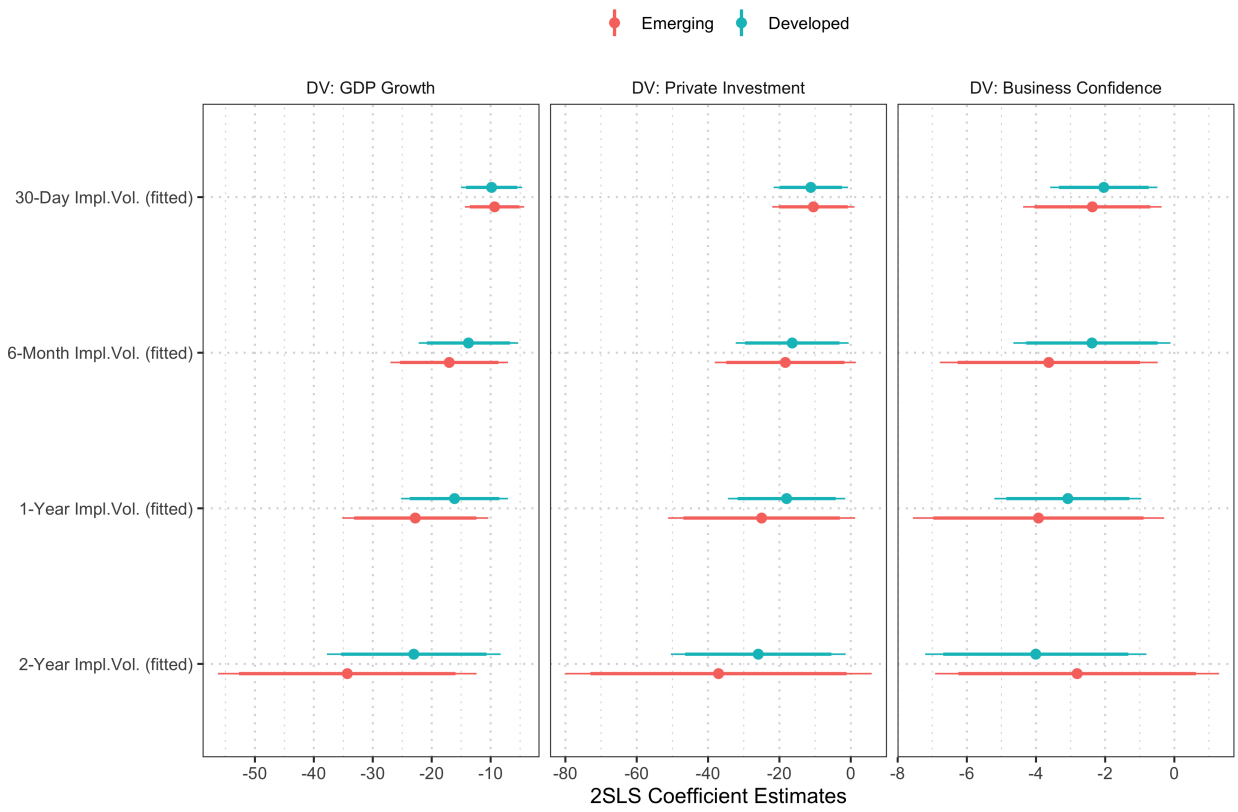

Figure 3. Coefficient estimates by level of stock market development (developed vs. emerging markets). *Note:* Figure shows two-stage least squares regression coefficients with 90/95% confidence intervals for countries with fixed-term elections.

level regressions show a positive relationship between implied volatility with short and long maturities and economic policy uncertainty, with the clear exception of the United Kingdom, where policy uncertainty seems to be inversely correlated with implied volatility. Because the United Kingdom's electoral system institutes flexible election timing, the country is excluded from all analyses limited to exogenously timed elections—the results of which uphold the study's conclusions.

5 Conclusion

The question of whether political processes and institutions help to explain differences in economic growth and prosperity across nations is one of the oldest and most important

questions in the field of political economy. Many have argued that institutional features such as regime type (Przeworski, Alvarez, and Cheibub 2000) and executive constraints (Henisz 2000; Nooruddin 2011) are key for promoting a stable environment beneficial for investment and growth. Yet, few studies have explicitly probed the link between electoral uncertainty—and its institutional underpinnings—and national economic performance.

The relationship between political uncertainty and real economic output is important for emerging and developed countries alike. When it comes to emerging market countries, one of the standard definitions of an emerging market in policy and scholarly circles is a country where politics matters at least as much as economics to market outcomes (Bremmer and Keat 2010). This is especially so among those countries that have recently transitioned into democratic regimes, but do not yet have fully mature and institutionalized liberal democratic systems. In these emerging democratic regimes, elections tend to generate high levels of economic policy uncertainty (Przeworski 1991). Understanding the causal relationship between electoral uncertainty and real economic outcomes is an important step in identifying enduring barriers to economic progress in the emerging world.

But the question is no less relevant for contemporary advanced democracies. While policy-related volatility is commonly associated with developing economies, election-induced investor uncertainty has been extensively documented in developing and developed countries alike (see e.g. Bernhard and Leblang 2006; Bechtel 2009), and policy uncertainty has been shown to depress capital investment and economic growth in many developed markets (Bachmann, Elstner, and Sims 2013; Baker, Bloom, and Davis 2016; Berger, Dew-Becker, and Giglio 2020). Indeed, with the contemporary rise of populist and nationalist parties and the political backlash against globalization, election-related policy uncertainty and market volatility are bound to become more salient a concern for developed country governments and more consequential a factor for the real economy (Slaski 2021; Cunha and Kern Forthcoming).

This study thus situates political uncertainty within the broader question of the sources of

economic growth. The research moves beyond understanding how financial markets respond to elections to examining why political uncertainty affects long-run economic performance. The findings raise additional questions for future research. What institutional conditions moderate the relationship between political uncertainty, financial market volatility, and economic growth? Sattler (2013), for example, shows that in certain cases, politics is not of primary importance to financial investors, because elections can have minor consequences for returns on financial investments where executive constraints are stronger. Do constraints on executive authority similarly moderate the effects of election-induced long-run policy uncertainty on the real economy? In addition, does the global financial environment modify the relationship between political uncertainty and real economic activity? On the one hand, the existing body of evidence suggests that politics continues to matter for financial markets even after most economies have opened up to global capital flows. On the other hand, research indicates that in periods of high global liquidity, domestic political factors diminish in importance in financial investors' evaluations of political risk (Ballard-Rosa, Mosley, and Wellhausen 2021). Combining domestic models of financial markets and politics with macro-level explanations of the global political economy may thus yield useful insights into this question.

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A Supplementary Information

Table A1. Sample of countries and stock market options

Country	Ticker	Index	Start Date	End Date
Argentina	ARGT	MSCI Argentina	2014/02/26	2020/12/31
Australia	EWA	MSCI Australia	2007/01/29	2020/12/31
Austria	EWO	MSCI Austria	2018/09/14	2019/06/11
Belgium	EWK	MSCI Belgium	2013/09/18	2020/12/31
Brazil	EWZ	MSCI Brazil	2006/05/25	2020/12/31
Canada	EWC	MSCI Canada	2006/03/02	2020/12/31
Chile	ECH	MSCI Chile	1996/01/04	2020/12/31
Colombia	GXG	MSCI Colombia	2012/12/12	2020/12/31
France	EWQ	MSCI France	2011/08/10	2020/12/31
Germany	EWG	MSCI Germany	2006/11/22	2020/12/31
Greece	GREK	MSCI Greece	2013/05/22	2020/12/31
Hong Kong	EWH	MSCI Hong Kong	2006/03/02	2020/12/31
India	INDY	Nifty 50	2011/02/08	2020/12/31
Indonesia	EIDO	MSCI Indonesia	2015/08/07	2020/12/31
Israel	ISRA	BlueStar Israel Global	2013/07/17	2020/12/31
Italy	EWI	MSCI Italy	2010/07/13	2020/12/31
Japan	EWJ	MSCI Japan	2005/10/10	2020/12/31
Malaysia	EWM	MSCI Malaysia	2008/01/01	2020/12/31
Mexico	EWW	MSCI Mexico	2007/11/29	2020/12/31
Netherlands	EWN	MSCI Netherlands	2013/08/14	2020/12/31
New Zealand	ENZL	MSCI New Zealand	2013/08/21	2020/12/31
Peru	EPU	MSCI Peru	2011/02/08	2019/06/11
Philippines	EPHE	MSCI Philippines	2015/08/07	2016/10/11
Poland	EPOL	MSCI Poland	2017/09/11	2019/08/06
Singapore	EWS	MSCI Singapore	2009/11/18	2020/12/31
South Africa	EZA	MSCI South Africa	2007/05/24	2020/12/31
South Korea	EWY	MSCI South Korea	2007/07/11	2020/12/31
Spain	EWP	MSCI Spain	2007/06/21	2020/12/31
Sweden	EWD	MSCI Sweden	2007/05/24	2020/12/31
Switzerland	EWL	MSCI Switzerland	2008/02/19	2020/12/31
Taiwan	EWT	MSCI Taiwan	2006/03/09	2020/12/31
Turkey	TUR	MSCI Turkey	2013/06/24	2020/12/31
United Kingdom	EWU	MSCI United Kingdom	2006/05/12	2020/12/31

Table shows the geographic and temporal coverage of the sample of equity implied volatility, including the index underlying the country's options and the start and end dates for the available option data. Data on implied volatilities from OptionMetrics.

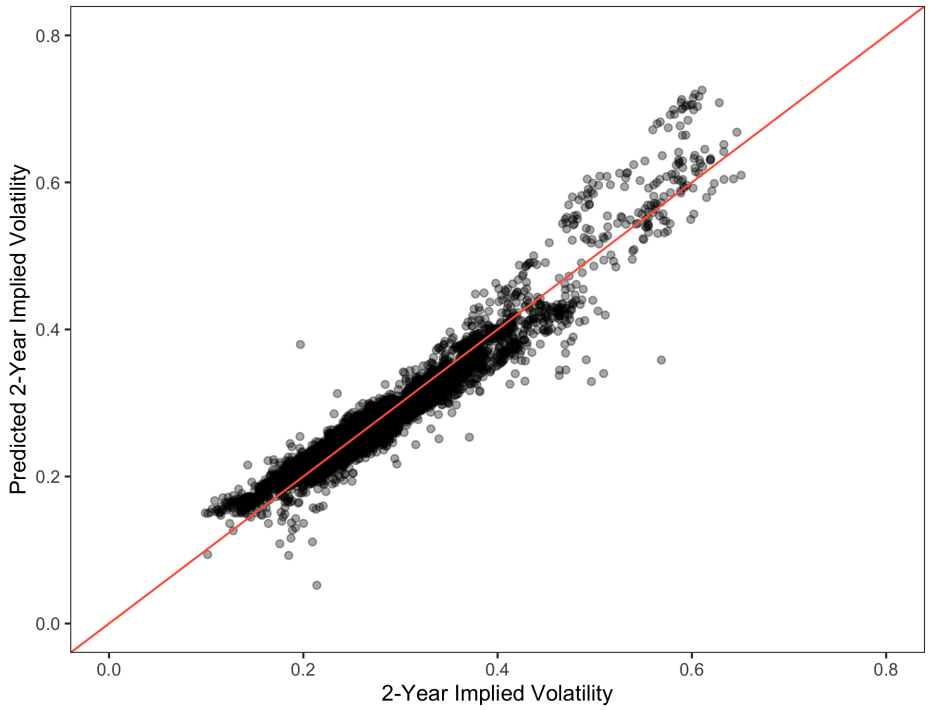

Figure A1. Predicted 2-Year Implied Volatility vs. Actual 2-Year Implied Volatility

Table A2. Elections and Stock Market Implied Volatility (Full Sample)

	Sample: All Elections (Fixed + Flexible Timing)			
	Dependent Variable: Implied Volatility			
	30 Days	*6 Months*	*1 Year*	*2 Years*
	(1)	(2)	(3)	(4)
Election Month – 12	−0.086**	−0.080***	−0.056**	−0.052***
	(0.035)	(0.025)	(0.021)	(0.017)
Election Month – 11	0.005	−0.033	−0.058**	−0.070***
	(0.038)	(0.027)	(0.023)	(0.021)
Election Month – 10	0.253***	0.166***	0.117***	0.062***
	(0.047)	(0.033)	(0.027)	(0.021)
Election Month – 9	0.177***	0.134***	0.119***	0.086***
	(0.043)	(0.032)	(0.031)	(0.026)
Election Month – 8	0.094**	0.077**	0.068**	0.054**
	(0.039)	(0.030)	(0.027)	(0.023)
Election Month – 7	0.120***	0.081***	0.073***	0.055**
	(0.037)	(0.029)	(0.026)	(0.022)
Election Month – 6	0.077**	0.060**	0.045	0.037
	(0.035)	(0.029)	(0.028)	(0.025)
Election Month – 5	0.051	0.052*	0.040	0.031
	(0.036)	(0.030)	(0.030)	(0.026)
Election Month – 4	0.088**	0.078***	0.050*	0.044*
	(0.035)	(0.026)	(0.027)	(0.023)
Election Month – 3	0.076**	0.070***	0.049*	0.040*
	(0.032)	(0.024)	(0.026)	(0.023)
Election Month – 2	0.044	0.043	0.029	0.022
	(0.033)	(0.028)	(0.028)	(0.023)
Election Month – 1	0.058*	0.038	0.007	0.001
	(0.033)	(0.028)	(0.026)	(0.023)
Election Month	0.104**	0.085**	0.078*	0.071*
	(0.040)	(0.037)	(0.039)	(0.037)
Election Month + 1	0.039	0.020	−0.004	−0.014
	(0.046)	(0.038)	(0.033)	(0.029)
Election Month + 2	−0.012	−0.015	−0.012	−0.008
	(0.047)	(0.037)	(0.038)	(0.031)
Election Month + 3	−0.041	−0.023	−0.036	−0.025
	(0.045)	(0.036)	(0.034)	(0.029)
Election Month + 4	0.007	0.006	−0.011	−0.012
	(0.053)	(0.041)	(0.041)	(0.033)
Election Month + 5	0.025	0.010	0.008	0.001
	(0.048)	(0.040)	(0.038)	(0.031)
Election Month + 6	0.005	−0.004	−0.015	−0.017
	(0.052)	(0.042)	(0.035)	(0.029)
N	82 723	82 350	63 696	63 669
Countries	33	33	33	33

Table shows fixed effects estimates with standard errors clustered by country in parentheses. The unit of analysis is the country-day. The dependent variable is the daily equity implied volatility (logged). All models include country fixed effects. $^{*}p < 0.1, ^{**}p < 0.05, ^{***}p < 0.01$.

Table A3. Placebo Test: Election-Induced Uncertainty and Government Spending

	2SLS			
	Dependent Variable: Government Spending Growth			
	Full Sample			
	(1)	(2)	(3)	(4)
$\widehat{\text{30-Day Impl.Vol.}}$	−0.914			
	(1.431)			
$\widehat{\text{6-Month Impl.Vol.}}$		−0.983		
		(2.228)		
$\widehat{\text{1-Year Impl.Vol.}}$			−1.761	
			(2.683)	
$\widehat{\text{2-Year Impl.Vol.}}$				−2.093
				(4.446)
N	1331	1327	1323	1320
Countries	33	33	33	33
	Fixed Term Only			
	(5)	(6)	(7)	(8)
$\widehat{\text{30-Day Impl.Vol.}}$	−2.099			
	(1.829)			
$\widehat{\text{6-Month Impl.Vol.}}$		−2.798		
		(2.588)		
$\widehat{\text{1-Year Impl.Vol.}}$			−3.669	
			(3.252)	
$\widehat{\text{2-Year Impl.Vol.}}$				−5.775
				(4.814)
N	741	737	733	731
Countries	20	20	20	20

Two-stage least squares estimates with standard errors clustered by country in parentheses. The unit of analysis is the country-quarter. The dependent variable is annualized quarterly growth in government spending. All models include country fixed effects. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table A4. Stock Market Implied Volatility and Economic Policy Uncertainty

	$log(IVOL_{i,t,m}) = \alpha_i + \beta EPU_{i,t} + \varepsilon_{i,t,m}$								
	30-Day Impl. Vol.			*1-Year Impl. Vol.*			*2-Year Impl. Vol.*		
	β	t	N	β	t	N	β	t	N
Pooled Sample	0.0006	7.00	2538	0.0004	5.14	2001	0.0003	4.25	2001
Australia	0.0030	7.41	168	0.0021	6.25	137	0.0017	5.74	137
Brazil	0.0008	3.37	176	0.0005	2.81	172	0.0004	2.52	172
Canada	0.0002	0.68	178	0.0001	0.30	136	0.0000	0.12	136
Chile	0.0011	3.06	169	0.0009	3.18	112	0.0008	3.18	112
Colombia	0.0033	5.54	97	0.0022	5.98	64	0.0016	2.53	64
France	0.0015	3.77	113	0.0011	2.66	75	0.0009	2.54	75
Germany	0.0010	2.92	170	0.0004	1.67	149	0.0003	1.17	149
Greece	0.0049	4.40	92	0.0040	4.61	70	0.0040	2.41	70
India	-0.0003	-0.35	94	0.0017	3.29	59	0.0020	2.66	59
Italy	0.0029	4.46	126	0.0026	4.20	92	0.0023	3.89	92
Japan	0.0036	5.08	183	0.0024	5.24	182	0.0019	5.06	182
Mexico	0.0067	9.20	143	0.0045	9.19	141	0.0036	8.84	141
Netherlands	0.0053	4.45	89	0.0035	3.83	60	0.0029	3.74	60
Singapore	0.0011	2.46	98	0.0005	1.20	65	0.0003	0.73	65
South Korea	0.0005	1.09	162	0.0003	0.82	158	0.0002	0.65	158
Spain	0.0024	3.16	163	0.0022	2.91	107	0.0019	2.78	107
Sweden	-0.0010	-0.58	141	-0.0057	-3.86	89	-0.0053	-4.17	89
United Kingdom	-0.0006	-2.82	176	-0.0005	-3.30	133	-0.0004	-3.26	133

Table shows ordinary least squares estimates and t-statistics for regressions run by country and option maturity. The unit of analysis is the country-month. The model for pooled data includes country fixed effects with clustered standard errors at the country level. The dependent variable is the end-of-month equity implied volatility (logged). *EPU* is the Baker, Bloom, and Davis (2016) monthly country-level index of economic policy uncertainty.