Are regime changes always bad economics? Evidence from daily financial data [*]

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Abstract

Political instability is commonly thought to discourage investment and reduce economic growth. We challenge this consensus by showing that instability does not systematically depress investment. Using an event study approach, we examine daily returns of national financial indices in every country that experienced an irregular regime change subject to data availability. Returns following resignations are large and positive (+4%), while those following assassinations are negative and smaller in magnitude (-2%). The impact of coups tends to be negative (-2%), but we show that a pro-business coup results in large positive returns (+10%). We also find evidence that authoritarian or anti-business regime changes are more likely to lead to capital flight than democratic or pro-business changes. The immediate impact of political instability on investment is therefore dependent on the type of regime change and its expected impact on future growth.

Economies are now global, financialized, and integrated, with domestic economies intrinsically linked to international investment. However, political instability such as coups and other regimes changes appear to jeopardize access to capital. Investors, multinational firms, development agencies, and aid organizations rank political risk as a top consideration when making investment decisions in emerging markets.[1] These considerations of political risk are reflected in research showing that political instability is negatively correlated with investment, financial development, and GDP growth (Aisen and Veiga 2013; Alesina and Perotti 1996; Alesina, Özler, Roubini and Swagel 1996; Baker, Bloom and Davis 2016; Fosu 1992; Jong-A-Pin 2009; Roe and Siegel 2011), as well as associated with increases in stock market variance (Jensen and Schmith 2005; Leblang and Mukherjee 2005; Liu and Zhang 2015). Common rationales are that unstable governments act myopically and adopt inefficient policies. Unstable governments have, for example, been argued to be less likely to invest in the legal system and the protection of property rights (Svensson 1998), and to be more likely to increases taxes (Devereux and Wen 1998).[2]

In this study, we examine the impact of "irregular" regime changes and public protests on investment in a country's firms. However, unlike previous studies, we theorize that investors will not be uniformly discouraged by sudden regime change, but will instead recognize some sudden political shocks as "good" for future returns. We therefore (1) remain agnostic about the direction of the effect of political instability, and (2) separately examine the effect of different types of instability on domestic firms' access to financial capital. Specifically, we examine whether changes in financial flows differ for coups, resignations, assassinations, and

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[1]In the 2013 Multilateral Investment Guarantee Agency (MIGA) *World Investment and Political Risk* (2013) report (the last report published), executives of multinational enterprises (MNEs) ranked political risk as the second most important constraint for foreign direct investment (FDI) in developing countries over the next three years (after macroeconomic instability). In *World Investment and Political Risk* (2011) and *World Investment and Political Risk* (2012), political risk was ranked the most important constraint for FDI in developing countries - even greater than macroeconomic instability. The types of political risk of most concern to investors in developing countries (ranked in order of importance) were 1) adverse regulatory changes, 2) breaches of contract, 3) transfers and convertibility restrictions, 4) civil disturbances, 5) non-honoring of government guarantees, 6) expropriation nationalization, 7) terrorism and 8) war.

[2]Devereux and Wen (1998) proposes a model in which political instability causes governments to leave fewer assets to their successors which forces them into increasing capital taxes. The knowledge of future taxation then causes the private sector to reduce current investment which reduces future output.

protests, as well as for authoritarian vs. democratic and pro vs. anti business shifts. Stock market returns are used as an indicator of whether investors view different types of sudden political shocks as "good" or "bad" for future profits. Importantly, expected future profits may differ from general economic performance, as stock prices only reflect the expected future profits of existing publicly-held firms.

We also provide methodological advancements when compared to the aforementioned cross country studies. Specifically, we conduct event studies of daily financial data, which estimate a local average treatment effect of an unexpected event on stock prices *at the exact time of the event*. This interrupted time-series approach mitigates the endogeneity problems in previous cross country regressions—confounding events would need to occur on the same day as instability, and do so for a large portion of all of our independently tested events in order to influence our estimates.[3] In addition, we integrate synthetic control and event study methods and demonstrate how "synthetic" control portfolios can be used to apply a method akin to market-model event studies even when a suitable control portfolio is absent.

We analyze the full sample of politically unstable events for which national-level daily financial data is available—13 successful coups, 8 assassinations, 15 forced resignations, and 11 public protests.[4] In addition, we examine 24 failed coups in order to compare the impact of successful coups that resulted in regime change to coups attempts that did not. We also engage in a closer examination of the failed 2002 Venezuelan coup, as it provides a special case that allows us to observe the effects of both a seemingly successful pro-business coup, and the immediate reinstatement of a left-wing populist. Our study therefore not only uses an event-study approach to enhance the reliability of our estimates, but simultaneously

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[3]A growing body of work uses event studies to assess political phenomenon. For example, political events have been used to estimate the effect of political connections on firm value (e.g. Faccio 2006; Fisman 2001; Goldman, Rocholl and So 2009). Studies in "forensic economics" have used abnormal returns from political events to locate or examine transactions such as insider trading (Dube, Kaplan and Naidu 2011), illegal arms trading (DellaVigna and La Ferrara 2010), and the impact of hostilities on the financial performance of diamond mining firms in Angola (Guidolin and La Ferrara 2007).

[4]We recognize that this does not represent a full list of historical coups, assassinations, resignations, and public protests, but are restricted to the sample of events for which national-level daily financial data is available.

examines a relatively large sample that enhances external validity and allows us to show that different types of political events have disparate effects.

We find that coups, assassinations, resignations, and public protests cause large increases in financial volatility. However, the magnitude and direction of the effects differ by type of regime change. On average, abnormal returns following resignations are large and positive (+4%) while abnormal returns following assassinations and coups tend to be negative and smaller in magnitude (-2%). We also find suggestive evidence that authoritarian regime changes are more likely to lead to negative returns that democratic regime changes. Finally, we examine the effect of pro versus anti business regime change via an in-depth examination of the seemingly successful but ultimately failed coup against Hugo Chavez in 2002. Stock prices increased dramatically (+10%) after the failed overthrow of Chavez's socialist regime and decreased by approximately the same magnitude following his return to leadership.

Our primary contributions are empirical and methodological. We provide the first estimates of the effects of different types of political instability on domestic capital access. We show that instability does not systematically depress investment, and find evidence that authoritarian regime changes are more likely to lead to negative returns, but that leaders who are clearly pro-business can be rewarded by financial markets even if they use extrajudicial methods to take power. The capital flows we document are not insubstantial—they are in some cases larger shocks than the 2008 stock market crash on their respective domestic economies. Methodologically, we (1) employ a method less susceptible to endogeneity concerns than previous studies, and (2) integrate synthetic control and event study methods to allow for control portfolios when a control candidate is not present.

Reexamining how markets respond to irregular regime changes

Stable capital flows are important to financial stability in emerging markets, which are particularly exposed to shifts in the availability of foreign capital (Cohen, Domanski, Fender

and Shin 2017; Koepke 2019; Obstfeld 2012). High country risk reduces capital flows, which in turn has been shown to reduce domestic output growth (Koepke 2019). Conventional theory and cross-country empirical evidence suggests that political instability—as measured by events such as protests, strikes, assassinations, number of regime changes, and ongoing elections—depresses investment (Boutchkova, Doshi, Durnev and Molchanov 2012; Irshad 2017; Le and Zak 2006; Lehkonen and Heimonen 2015; Lensink, Hermes and Murinde 2000). However, if market returns reflect investor expectations about future economic growth and expected returns, there are reasons to believe such hypotheses may be overly simplistic.

First, a change in regime may be seen as a positive event for future economic performance if the current regime is regarded as anti-business or anti-global. Regime changes that attempt to overthrow anti-business autocrats may be expected to result in positive abnormal returns as investors see little risk of a replacement government "worse" than the status quo. For example, there is an active debate on whether "good coups" that lead to democratization or economic liberalization can be good for economic growth. Alesina et al. (1996) argues that the negative effects of uncertainty dominate the positive effects of coups staged by pro growth factions, while Alesina and Perotti (1996) submit that "unconstitutional" regime changes such as coups are worse for economic growth than other types of political instability. Londregan and Poole (1990) find that coups have no impact on economic growth and hypothesize that this may be because there is a bimodal distribution of coups, some of which enhance growth and others which restrict it.

Most research suggests that "good coups" are not the norm (Derpanopoulos, Frantz, Geddes and Wright 2016; Powell and Thyne 2011; Thyne and Powell 2016; Varol 2011), but some evidence suggests that they have become more frequent (Marinov and Goemans 2014) and could have positive economic effects. Meyersson (2016) finds that coup attempts that occur in democratic regimes are associated with negative GDP growth, while those that occur in autocratic regimes are associated with positive GDP growth. In another study examining the same outcome variable as our own—financial returns—Girardi and Bowles

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(2018) show that Salvador Allende's socialist government was associated with declines in stock prices while the coup that replaced him boosted them.

Previous research therefore suggests that on average coups should not be expected to lead to increased economic development or positive market returns, but that positive returns associated with "good coups" could occasionally be present. We shed light on this theory as our event study approach also allows us to examine "good coups"—coups that lead to democratization or economic liberalization—separately from others. As we are not limited to a single case study, we can provide both a cross-country and within-case analysis.

Second, it is not necessarily the case that even a sudden, extra-legal, or unexpected regime change will result in higher levels of instability. Not all regime changes are equivalent— resignations, assassinations, and coups are all examples of sudden regime changes and have been used as proxies for instability in previous research. However, resignations often occur when an ineffective leader steps down. By contrast, assassinations are not always related to the effectiveness of a leader, can occur seemingly at random, and the successor to the assassinated leader may be unclear. Coups can occur in the name of democracy or autocracy, and in general signal relative weakness in the current political system. These differences are often overlooked in past empirical strategies, which have proxied for instability in terms of the number of coups (Alesina et al. 1996; Londregan and Poole 1990), assassinations or revolutions (Barro 1991), or have combined various metrics into single indices (Alesina and Perotti 1996; Gupta 1990; Venieris and Gupta 1986).[5] In another cross-country regression study, Jong-A-Pin (2009) disaggregates instability into four main metrics, one of which is regime changes, but does not subset below this metric. By contrast—recognizing the different degrees of instability that these events may reflect—we estimate effects separately for coups, assassinations, resignations, and protests. Our event study approach affords us this freedom without encountering the statistical power issues that would arise in a regression setting.

Third, the theoretical link through which political events are expected to have an impact

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[5]Note that these studies vary by metrics included in the indices, method of aggregation, and outcome variable of interest.

on daily stock prices is changes in the broader macroeconomic environment that influence the expected stream of future profits of existing publicly-held firms. Examples of expected changes in the macroeconomic environment that can be influenced by sudden political events include: shifts in monetary policy, changes in trade or FDI openness, shifts in regulatory policy, changes in the share of output going to capital, transfer and convertibility restrictions, degree of resource nationalism, and heightened risk of capital expropriation or breach of contracts. Not all shocks to the political system will result in similar shifts in these macroeconomic variables depending on the actors involved, their ideological preferences, and their expected ability to enact policy changes.

Different types of regime changes may therefore have disparate effects on investment, just as they may differentially effect overall economic growth. Taken together, the theory and research above suggests that coups should on average lead to negative returns, but sometimes lead to positive returns when the coup's instigators are clearly more pro market than the regime they replace. Assassinations should have a neutral or negative impact as they increase uncertainty, but institutional responses to assassinations vary by country. By contrast, resignations may be viewed positively on average, as they typically signal the departure of an ineffective leader and may in fact signal *increased* stability. Using immediate, day-of shocks to stock prices as our outcome variable, we investigate the hypothesis that investors will positively update their perceptions of future economic performance when a sudden political event clearly shifts a country in a pro-democratic or pro-business direction, and negatively update when an event merely exacerbates instability or uncertainty.

Our empirical findings validate these predictions. We find that the type of political event and its expected impact on economic policy determines the direction of investment. Events expected to lead to more stable governance, economic liberalization, or democratization (such as willful resignations and coups that overthrow protectionist or leftist autocrats) are associated with positive returns, while those that consolidate authoritarian rule (e.g. military coups), exacerbate poor economic policies, or merely increase policy uncertainty

(such as assassinations) have the opposite effect. Of course, changes in stock prices reflect investor's *expected* changes in the macroeconomic environment, and these expectations may differ from realized future economic performance. Nevertheless, it is clear from our results that even sudden and extra-legal regime changes can be viewed as a "positive" event by investors under the right circumstances.

Data

Financial data are from the Global Financial Data database, which includes the longest available daily time series of stock prices. We collect data on national equity indices and two global equity indices, the S&P/IFC Emerging Market Investable Composite and the Morgan Stanley Capital International (MSCI) World Index. The S&P/IFC index includes securities from emerging markets while the MSCI index includes securities from developed markets only. We collect national stock index data on every country in which there was a coup or coup attempt, an assassination or failed assassination, or a forced resignation and for which daily financial data is available.[6] The longest available daily time series for these stock indices are listed in Table 1.

Political data are primarily drawn from the Center for Systemic Peace's (CSP) Polity IV Coup d'etat dataset and Coup d'etat Events handbook. The Coup d'etat dataset includes the date of 1) successful coups, 2) attempted coups, 3) plotted coups and 4) alleged coup plots. We focus on successful coups because it is difficult to classify failed coups, and the choice of dataset and classification methodology would directly alter our findings. Needler (1966, p. 617) has gone so far as to say that "the categories of coups that were aborted, suppressed, or abandoned melt into each other and into a host of other non-coup phenomena so as to defy accounting," the Center for Systemic Peace states that it is "confident that [its] list of successful coups is comprehensive" but does not extend this confidence to attempted or failed coups, and Powell and Thyne (2011) state that it is "difficult to identify more

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[6]The list of failed assassinations are from Jones and Olken (2009). Coup attempts are those in category 2 in the CSP Coup d'etat dataset.

Table 1: List of stock indices

Date	Country	Begin Date	Start Date
Argentina	Beunos Aires SE General Index	Dec-66	Jan-17
Australia	Australia ASX All Ordinaries	Jan-58	Jan-17
Bangladesh	Dhaka SE Index	Jan-90	Jan-17
Canada	Canada S&P/TSX 300 Composite	Jan-76	Jan-17
Chile	Santiago IGBC General Index	Jan-75	Jan-17
Colombia	Colombia IGBC General Index	Jan-92	Jan-17
Ecuador	Ecuador Bolsa de Valores de Guayaquil (BVG)	Jan-94	Jan-17
Egypt	Cairo SE Index	Dec-92	Jan-17
Emerging Market	S&P/IFC Emerging Markets Investable Composite	Jul-95	Jan-17
Greece	Athens SE General Index	Oct-88	Jan-17
India	Bombday SE SENSEX	Apr-79	Jan-17
Indonesia	Jakarta SE Composite Index	Apr-83	Jan-17
Iran	Tehran SE Price Index	Jan-95	Jan-17
Israel	Tel Aviv 100 Index	May-87	Jan-17
Japan	Tokyo SE Price Index (TOPIX)	Jan-53	Jan-17
Latin America	Dow Jones Latin America Index	Jan-92	Jan-17
Lithuania	Lithuania Lit-10 Index	Jan-99	May-05
Malaysia	Malaysia KLSE Composite	Jan-80	Jan-17
Nepal	Nepal NEPSE Stock Index	Jan-01	Jan-17
Netherlands	Netherlands All-Share Price Index	Jan-80	Jan-17
Pakistan	Karachi SE 100 Index	Jan-89	Jan-17
Paraguay	Asuncion SE PDV General Index	Oct-93	Sep-08
Peru	Lima SE General Index	Jan-82	Jan-17
Philippines	Manila SE Composite Index	Jan-86	Jan-17
Portugal	Oporto PSI-20 Index	Jan-86	Jan-17
Singapore	Singapore FTSE ST Index	Jul-65	Jan-17
South Korea	Korea SE Stock Price Index	Jan-62	Jan-17
Southeast Asia	Dow Jones Southeast Asia Index	Jan-92	Jan-17
Spain	Madrid SE General Index	Aug-71	Jan-17
Sri Lanka	Colombo SE All-Share Index	Dec-84	Jan-17
Sweden	Sweden OMX Affarsvarlden General Index	Jan-80	Jan-17
Taiwan	Taiwan SE Capitalization Weighted Index	Jan-67	Jan-17
Thailand	Thailand SET General Index	Apr-75	Jan-17
Tunisia	Tunisia SE Index	Dec-97	Jan-17
Turkey	Instanbul IMKB 100 Price Index	Oct-87	Jan-17
Ukraine	Ukraine PFTS OTC Index	Jan-98	Jan-17
United Kingdom	UK FTSE All-Share Index	Nov-62	Jan-17
United States	Dow Jones Industrial Average	Feb-1885	Jan-17
Uruguay	Bolsa de Valores de Montevideo Index	Jan-08	Jul-16
Venezuela	Dow Jones Venezuela Stock Index	Jan-92	Jul-07
Venezuela	Caracas SE General Index	Jan-94	Jan-17
World	MSCI World Price Index	Jan-76	Jan-17
Zambia	Lusaka SE Index	Jan-02	Apr-06
Zambia	Lusaka SE Index	Jul-11	Jan-17

ambiguous forms of coup activity, such as coup failures, plots, and rumors." With this caveat in mind, we nevertheless additionally construct a database of failed coups from the

Colpus dataset (Chin, Carter and Wright 2021) in order to test for robustness to inclusion of ambiguous coup cases, which can be found in Table A.6 in the appendix.

Table 2: Regime changes

Date	Country	Political Outcome
Coups		
06/30/1970	Argentina	Autocracy to autocracy
03/22/1971	Argentina	Autocracy to autocracy
03/24/1976	Argentina	Democracy to autocracy
10/06/1976	Thailand	Anocracy to autocracy
10/20/1977	Thailand	Autocracy to anocracy
12/12/1979	South Korea	Autocracy to autocracy
02/23/1991	Thailand	Anocracy to anocracy
04/05/1992	Peru	Democracy to anocracy
10/12/1999	Pakistan	Democracy to autocracy
10/04/2002	Nepal	Democracy to autocracy
09/19/2006	Thailand	Democracy to anocracy
01/11/2007	Bangladesh	Democracy to autocracy
07/03/2013	Egypt	Anocracy to anocracy
05/22/2014	Thailand	Democracy to anocracy
Assassinations		
09/06/1901	United States	Democracy to democracy
11/22/1963	United States	Democracy to democracy
10/26/1979	South Korea	Autocracy to autocracy
10/31/1984	India	Democracy to democracy
02/28/1986	Sweden	Democracy to democracy
05/01/1993	Sri Lanka	Anocracy to anocracy
11/04/1995	Israel	Democracy to democracy
06/01/2001	Nepal	Democracy to democracy
Resignations		
06/17/1982	Argentina	Autocracy to autocracy
02/25/1986	Philippines	Autocracy to democracy
12/06/1990	Bangladesh	Anocracy to anocracy
05/24/1992	Thailand	Anocracy to anocracy
04/18/1993	Pakistan	Democracy to democracy
11/05/1996	Pakistan	Democracy to democracy
06/30/1997	Turkey	Democracy to democracy
05/21/1998	Indonesia	Autocracy to anocracy
01/20/2001	Philippines	Democracy to democracy
12/20/2001	Argentina	Democracy to democracy
04/06/2004	Lithuania	Democracy to democracy
12/26/2004	Ukraine	Democracy to democracy
04/20/2005	Ecuador	Democracy to democracy
04/24/2006	Nepal	Autocracy to democracy
01/14/2011	Tunisia	Anocracy to democracy

Notes: The Polity score is used to classify political outcomes as follows: autocracy $= -10 \leq$ score ≤ -6, anocracy $= -5 \leq$ score ≤ 5, and democracy $= 6 \leq$ score ≤ 10.

The Coup d'etat Events handbook also provides a list of 1) auto-coups[7], 2) the ouster of leadership by foreign forces, 3) the ouster of leadership by rebel forces, 4) assassinations of the executive and 5) resignations of the executive due to poor performance and/or loss of authority. Daily financial data is available for countries in categories 4 and 5, so we supplement the coups with assassinations and resignations to form a list of "irregular" regime changes. The resignations are those in which the ruling executive was coerced to resign due to poor performance, public discontent and popular demonstrations. Note that the Polity IV definition of "poor performance" is not synonymous with poor *economic* performance, and in practice the reasons cited for resignation across events are: loss in conflict/war, anti-authoritarian protest, corruption scandals, Supreme Court ruling against unconstitutional actions, contested elections, and abuse of power.

We further supplement the CSP data with leadership data from Archigos Version 4.1, which allows us to identify additional cases in which a "leader lost power through irregular means." Irregular transfers of power are those in which leaders do not leave office "in a manner prescribed by either explicit rules or established conventions." Nearly all removals by irregular means result from the threat or use of force (e.g. coups, revolts and assassinations).

A list of the political events in our dataset is shown in Table 2. Coups tend to have the largest impact on the level of democratization as a number of countries have subsequently transitioned from democracies to anocracies or autocracies. On the other hand, neither assassinations or resignations have much of an impact on the level of democratization.

The discussion above shows that there is considerable debate about classification of regime changes. We recognize that some readers may feel that certain events are missing based on their own substantive knowledge. However, we choose to rely on commonly used third-party classifications in order to minimize the possibility that our results are driven by our own subjective classifications. The one exception is that we separately study the failed coup attempt in Venezuela in April 2002 in which the President of Venezuela, Hugo Chavez, was

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[7]Defined by Center for Systemic Peace as the "occurrence of subversion of the constitutional order by a ruling (usually elected) executive and the imposition of an autocratic regime."

removed from office for two days because it provides a natural test of the impact of the seemingly successful removal of a left-wing populist with a pro-business regime, and the ensuing reinstatement of a left-wing populist.

To gain perspective on the relationship between irregular regime changes and the stock market, Figure 1 plots the absolute value of daily stock returns averaged across all events. Returns are for 200 trading days before and after regime changes. The absolute value of returns on the event day (trading day 0) are significantly larger than on any other day. In addition, the magnitude of returns begins increasing just before the event day and remains high for a short period after. This suggests that financial volatility increases during the days surrounding regime changes, although it does not provide any evidence on mean returns.

Impact of Political Instability on Stock Returns tests these results more formally. It will first formally estimate the amount of volatility surrounding all irregular regime changes, then analyze coups, assassinations and resignations separately and determine what impact they have on mean returns.
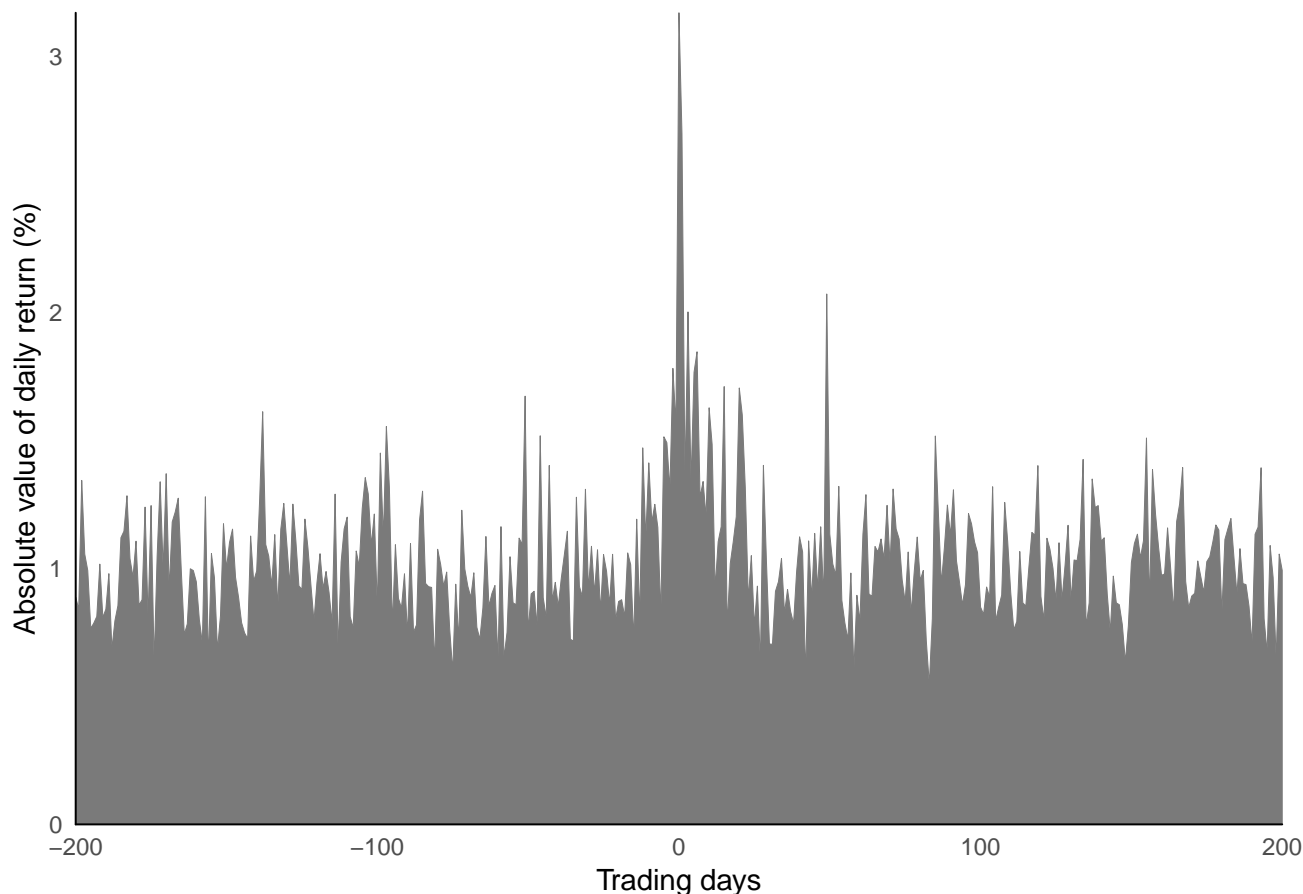
Figure 1: Absolute value of daily returns

Estimation strategy

We estimate the effect of irregular regime changes on financial flows using an interrupted time series—also known as event study—approach, and examine the impact of political events on stock returns using daily financial data. Additional explanation of the theoretical logic of why mean *daily* stock market returns would be influenced by politically unstable events is warranted. Event studies rely on the theoretical assumption that investors anticipate the effect of sudden events (e.g., corporate announcements, regulatory policy changes, political events, etc.) on future profitability of a firm or firms in a market, and importantly, that these anticipated changes in profitability are *immediately* reflected in stock market prices. The approach therefore implicitly relies on the efficient market hypothesis, or the idea that

in an efficient market, stocks instantly incorporate publicly available information into their prices (Fama 1965; Samuelson 1965). The immediate nature of this effect allows us to use the magnitude and direction of sudden fluctuations in granular daily data as a proxy for investors' expected valuation of the event in terms of future profits. This in turn allows us to examine how global financial actors value different kinds of politically unstable events—for example, pro-vs-anti business coups.

The focus on *immediate* fluctuations in daily financial data implies that we are examining the effect of "one shot" regime changes akin to a sudden day-of shock. Our estimates therefore capture the effect of these sudden, unexpected shocks on stock prices on the same day of the shock. Importantly, this implies that we are not estimating the effect of any larger underlying political conditions surrounding the event, but rather only the immediate event itself independent of other surrounding conditions. Further, as this approach provides an estimate *at the exact time of the event*, confounding events would need to occur on the same day, and do so for a large portion of all of our independently tested events in order to influence our estimates. We recognize that broader definitions of political instability may encompass political volatility over a wider range of time. In an attempt to address this concern, we also examine the impact of periods of protest and failed coup attempts on financial returns in the appendix.

The key identifying assumption behind our interrupted time-series approach is that the events are unpredicted in an immediate temporal sense. In other words, for an event to be plausibly exogenous, the exact timing of the event must be unknown to investors. If information about the event has leaked prior to occurrence of the event, a portion of the change in investment will already be priced into the index during the estimation window.

Volatility

Before examining the magnitude and direction of returns, we first confirm that our sample of events exhibits the increases in volatility suggested by previous literature. Since

stock volatility is not directly observable, one must decide how to best estimate volatility. Our estimates are obtained from a generalized autoregressive conditional heteroskedasticity (GARCH) model estimated using 1000 pre-event days, the event day and 1000 post-event days. As in Jensen and Schmith (2005) and Leblang and Mukherjee (2005), we use the GARCH (1,1) specification. In particular, for national stock index i,

$$R_{it} = \mu_i + \epsilon_{it}, \qquad \epsilon_{it} \sim \mathcal{N}\left(0, \sigma_{it}^2\right),$$

where μ_i is a constant and,

$$\sigma_{it}^2 = \gamma_i + \alpha_i \epsilon_{i,t-1}^2 + \beta_i \sigma_{i,t-1}^2.$$

The key parameter of interest is the conditional variance, σ_{it}^2. The one-period-ahead volatility forecasts, σ_{it}, are larger when $\epsilon_{i,t-1}^2$ and $\sigma_{i,t-1}^2$ are larger. In other words, the model predicts that large shocks will be followed by other large shocks. As robustness checks, we also estimate volatility using exponential GARCH, threshold GARCH, fractionally integrated GARCH, and GARCH(1,1) accounting for structural breaks in the time series data in the appendix.

Abnormal Returns

We now turn to the magnitude and direction of the effect of irregular regime changes on stock returns. We follow the standard event study methodology as presented by, among others, MacKinlay (1997) and Campbell, Lo and MacKinlay (1997). Normal performance is measured with a constant mean return model,

$$R_{it} = \mu_i + \epsilon_{it}, \tag{1}$$

where R_{it} is the logged return of national stock index i on trading day t and ϵ_{it} is the error term. We calculate abnormal returns (ARs), in an "event window" surrounding the date of each coup, $AR_{i\tau} = R_{i\tau} - \widehat{\mu}_i$, where τ is a date in the event window, and $\widehat{\mu}_i$ is estimated in an "estimation window" preceding the event window with Equation 1. We use a 41 day event window (i.e. 20 pre-event trading days, the event day, and 20 post-event trading days). The estimation window is the 250 trading days prior to the start of the event window. The abnormal returns are then used to generate cumulative abnormal returns (CARs) between event day τ_1 and event day τ_2: $CAR(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{i\tau}$.

A constant mean return model is used instead of a market model in order to maximize the number of observations and because our unit of analysis is country-wide market indices rather than firms.[8] To address concerns regarding use of a constant mean return model, we also create a synthetic control portfolio for each event and compare observed returns to the synthetic returns as a robustness check.

We define the event date as the first trading day in which the market could have reacted to news of the event. For example, during the October 12, 1999 coup d'etat in Pakistan led by General Pervez Musharraf, the army announced that Prime Minister Nawaz Sharif had been dismissed after market hours at 10:15 pm. We code October 14th, the day in which the market re-opened, as the event day. When events occurred on weekends, we change the event date to the following Monday.

$(0, \tau - 1)$ is used to denote the τ-day period beginning with the event day and $(-1, \tau)$ to denote the negative τ-day period beginning with the day prior to the event day. In other words, for cumulative abnormal returns prior to the event date, we aggregate backwards starting at the day of the event. For example, $CAR(-1, -2)$ is the sum of the abnormal returns on event date -1 and event day -2. We present results for the sum of abnormal returns over the post-event windows of the event date only $(0, 0)$, the event date plus 6 days $(0, 6)$, and the event date plus 19 days $(0, 19)$. In addition, we present results for the

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[8]Plausible market indices such as the MSCI World Index and the S&P/IFC Emerging Markets Investable Composite Index only begin in 1976 and 1995, respectively.

pre-event windows $(-1, -7)$ and $(-1, -20)$.

As we hypothesize that different types of regime changes will have disparate effects on markets, we report abnormal returns separately for coups, assassinations and resignations. Standard errors and p-values are calculated using asymptotic t-statistics as in MacKinlay (1997).[9]

Impact of Political Instability on Stock Returns

Volatility

Figure 2 shows the mean volatility ($\overline{\sigma}_t$) estimates from the GARCH (1,1) model across all irregular regime changes for 250 trading days prior to and 250 days after each event.[10] As expected, the volatility estimates stay between a narrow range at nearly all dates except those surrounding the regime change. Volatility appears to increase slowly just before the regime change, albeit not to a degree out of line with previous fluctuations in volatility. This may suggest that investors sometimes have information about the events before they occur. Nonetheless, there is still an enormous volatility jump on the day of the regime change. Volatility then decreases to normal levels within a month of the event.

Abnormal Returns

Coups

Table 3 shows abnormal returns for national stock indices both preceding and following coup d'etat. Table 3 contains all coups presented in Table 2 with the exception of the Argentinian coup of March 24, 1976. The March 24, 1976 Argentinian coup is excluded from our analysis because the stock market remained closed from March 24 to April 5, 1976, or a period of

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[9]It is appropriate to use the standard normal distribution to calculate test statistics because the length of the estimation window is sufficiently long (250 trading days).

[10]Robustness checks using exponential GARCH, threshold GARCH, FIGARCH, and GARCH(1,1) controlling for structural breaks can be found in Figure A.10, Figure A.11, Figure A.12, and Figure A.13, respectively.
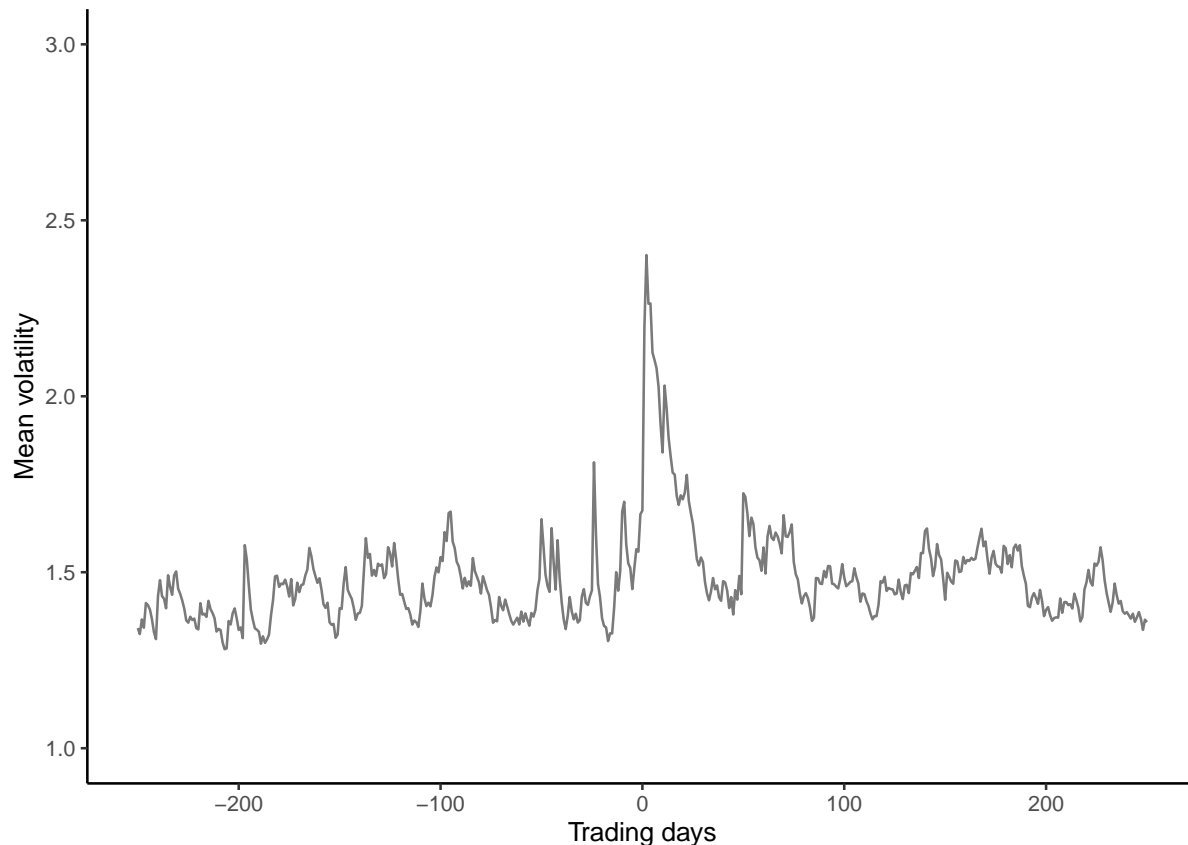
Figure 2: Mean of volatility estimates from GARCH(1,1) models

twelve days.[11]

The average coup has a -2.1% event day AR. Event day ARs for the 1970 coup in Argentina, the 1991 coup in Thailand, the 1992 coup in Peru, and the 1999 coup in Pakistan are all negative and statistically different than zero. Moreover, all of these cases except Thailand have negative post-event CARs and pre-event CARs that are statistically indistinguishable from zero. In all of these cases, the coup either overthrew a democratically elected government or changed governance from one military ruler to another. The initial negative reaction followed by additional post-event negativity is consistent with the expected market reaction from a successful authoritarian coup followed by post-event consolidation of power.

The only events with positive ARs are the 1971 coup in Argentina and the 2002 coup in Nepal. These results provide evidence that coups do not necessarily lead to negative

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[11]Treating this twelve day period as a single day CARs results in a positive abnormal return of 58%, a fluctuation that seems qualitatively unreasonable.

Table 3: Abnormal returns following coups

Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
Argentina	06/08/1970	−1.919	−0.530	−2.011	0.247	4.728	204
		(0.949)	(2.510)	(4.243)	(2.510)	(4.243)	
Argentina	03/22/1971	0.925	14.294	24.218	0.131	0.274	
		(1.216)	(3.218)	(5.439)	(3.218)	(5.439)	
Bangladesh	01/11/2007	−0.320	10.351	14.883	−0.896	2.250	2
		(1.166)	(3.086)	(5.217)	(3.086)	(5.217)	
Egypt	07/03/2013	−0.346	5.169	7.144	6.776	−4.869	2
		(1.515)	(4.009)	(6.776)	(4.009)	(6.776)	
Nepal	10/04/2002	0.090	1.563	5.567	−1.014	−0.493	2
		(1.206)	(3.190)	(5.392)	(3.190)	(5.392)	
Pakistan	10/14/1999	−7.737	−9.431	−7.130	4.151	4.900	36
		(1.943)	(5.141)	(8.690)	(5.141)	(8.690)	
Peru	04/06/1992	−6.819	−5.814	−25.027	−2.075	−10.519	5
		(2.210)	(5.848)	(9.885)	(5.848)	(9.885)	
South Korea	12/12/1979	−1.784	−3.474	−24.465	−1.678	−6.187	418
		(1.152)	(3.047)	(5.150)	(3.047)	(5.150)	
Thailand	10/06/1976	−0.541	0.837	0.731	0.001	0.713	3
		(0.639)	(1.691)	(2.859)	(1.691)	(2.859)	
Thailand	10/20/1977	−0.951	4.096	7.290	9.961	10.198	2
		(1.232)	(3.260)	(5.510)	(3.260)	(5.510)	
Thailand	02/25/1991	−7.326	2.860	14.162	6.326	26.262	7
		(2.884)	(7.631)	(12.899)	(7.631)	(12.899)	
Thailand	09/19/2006	−0.481	−2.640	0.111	1.848	0.131	17
		(1.094)	(2.894)	(4.892)	(2.894)	(4.892)	
Thailand	05/23/2014	−0.571	2.800	4.591	2.350	−0.424	5
		(1.201)	(3.177)	(5.370)	(3.177)	(5.370)	
Mean		−2.137	1.545	1.543	2.010	2.074	58
		(0.424)	(1.121)	(1.896)	(1.121)	(1.896)	

Notes: Standard errors are in parentheses. "Days to rebound" is the number of trading days following a negative stock return for the national stock index to return to pre-event level (it is calculated if the price decreases on the event day, not if the event day abnormal return is negative). Returns are inflation adjusted.

abnormal returns. While the 1971 Argentinian coup did result in another military leader, it did so while calling for free and democratic elections and replaced a government that had adopted extreme protectionist economic policies. In fact, by 1973 Argentina had transitioned to a democracy.[12] The 2002 coup in Nepal resulted in a monarchical restoration, but occurred after the country's prime minister postponed general elections, itself a democratically subversive action.

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[12]Based on Center for System Peace Polity IV polity score of 6. Values of 6-10 are defined as democracies.

Assassinations

The results in Table 4 are produced from analyses identical to those in Table 3 but for assassinations rather than coups. Like the majority of coups, there is evidence that assassinations decrease stock prices. The mean event day abnormal return is negative and statistically different than zero. However, the result is driven by five events: the shooting of U.S. President William McKinley on September 6, 1901; the assassination of U.S. President John F. Kennedy on November 22, 1963; the assassination of Indian Prime Minister Indira Gandhi on October 31, 1984; the suicide bombing that killed Sri Lankan president Ranasinghe Premadasa on May 1, 1993; and the assassination of Israeli Prime Minister Yitzhak Rabin on the evening of November 4, 1995.

Table 4: Abnormal returns following assassinations

Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
India	11/05/1984	−2.416	−1.259	−2.416	−3.916	1.344	5
		(0.668)	(1.767)	(2.987)	(1.767)	(2.987)	
Israel	11/05/1995	−3.460	−3.177	0.743	−0.857	−10.316	12
		(1.473)	(3.897)	(6.587)	(3.897)	(6.587)	
Nepal	06/12/2001	−0.513	2.965	15.516	5.956	1.791	20
		(3.513)	(9.295)	(15.711)	(9.295)	(15.711)	
South Korea	10/26/1979	−0.364	−9.376	1.186	0.690	−0.368	14
		(1.058)	(2.800)	(4.734)	(2.800)	(4.734)	
Sri Lanka	05/03/1993	−3.231	−0.983	3.515	−0.541	−1.360	7
		(0.767)	(2.030)	(3.432)	(2.030)	(3.432)	
Sweden	03/03/1986	0.698	5.038	10.908	−3.754	0.955	
		(0.927)	(2.452)	(4.145)	(2.452)	(4.145)	
United States	09/07/1901	−4.522	−3.055	−8.920	−0.733	3.456	963
		(1.283)	(3.394)	(5.738)	(3.394)	(5.738)	
United States	11/22/1963	−2.973	2.451	2.267	−2.666	−2.720	2
		(0.470)	(1.242)	(2.100)	(1.242)	(2.100)	
Mean		−2.098	−0.924	2.850	−0.728	−0.902	146
		(0.550)	(1.456)	(2.462)	(1.456)	(2.462)	

Notes: Standard errors are in parentheses. "Days to rebound" is the number of trading days following a negative stock return for the national stock index to return to pre-event level (it is calculated if the price decreases on the event day, not if the event day abnormal return is negative). Returns are inflation adjusted.

These results are consistent with our hypothesis that the nature of the political event and its expected impact on policy matters, and that assassinations should have a negative effect as they occur seemingly at random and increase uncertainty. While the mean effect

of assassinations is negative, it is smaller in magnitude than for coups. Unlike a coup, an assassination may not necessarily be expected to cause immediate change in economic policy, particularly in the presence of an institutionalized line of succession. As such, we would expect CARs to be negative due to increased instability and uncertainty, but smaller in magnitude to a coup or resignation due to greater expectations of policy inertia.

There is no evidence of post or pre-event CARs in almost any of the assassinations. This is consistent with expectations as assassinations are typically not predictable. As with coups, the number of days that it took the stock market to rebound to pre-event levels is fairly low.[13]

Resignations

In contrast to coups and assassinations, abnormal returns following resignations are large and positive (see Table 5). The mean event day abnormal return is over 4% and the positive returns are persistent and grow larger over time (mean 20-day CAR $\approx$ 12%). Furthermore, event day ARs are only negative and statistically significant at even the ten percent level in two out of the fifteen resignations (Pakistan on April 19, 1993 and Tunisia on June 31, 2011).

These results are again consistent with our hypothesis that different events will have disparate effects, and that resignations may lead to positive returns. The positive event day abnormal return following resignations is not surprising as resignations typically occur because of poor performance and/or loss of authority. Among our sample of events, leaders were ousted following loss in conflict/war, anti-authoritarian protest, corruption scandals, Supreme Court ruling against unconstitutional actions, contested elections, and abuse of power.

For example, consider Ferdinand Marcos' resignation from office as President of the

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[13]One exception is the assassination of William Mckinley in which the stock market didn't fully recover for 963 days, or almost 4 calendar years. However, this was likely caused by the Panic of 1901, which began when the stock market crashed on May 17th, 1901, and not by McKinley's death (although the assassination may have exacerbated the panic).

Table 5: Abnormal returns following resignations

Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
Argentina	06/18/1982	18.892	24.904	65.863	−2.819	28.234	
		(3.334)	(8.822)	(14.912)	(8.822)	(14.912)	
Argentina	12/20/2001	14.015	48.103	62.191	14.656	36.165	
		(1.976)	(5.227)	(8.836)	(5.227)	(8.836)	
Bangladesh	12/07/1990	0.323	1.002	2.171	1.880	3.654	
		(0.871)	(2.305)	(3.896)	(2.305)	(3.896)	
Ecuador	04/20/2005	−0.084	−0.249	−0.595	−1.305	0.710	
		(0.945)	(2.499)	(4.225)	(2.499)	(4.225)	
Indonesia	05/20/1998	2.817	4.296	4.543	−2.695	−17.868	
		(3.392)	(8.974)	(15.168)	(8.974)	(15.168)	
Lithuania	04/06/2004	−0.575	−3.319	−11.704	2.182	5.426	159
		(1.137)	(3.007)	(5.083)	(3.007)	(5.083)	
Nepal	04/25/2006	1.915	8.132	9.937	−1.951	−4.205	
		(0.665)	(1.760)	(2.975)	(1.760)	(2.975)	
Pakistan	04/19/1993	−3.265	−0.432	2.771	−0.312	−0.485	15
		(1.108)	(2.930)	(4.953)	(2.930)	(4.953)	
Pakistan	11/06/1996	5.084	1.229	−0.441	4.182	7.597	
		(1.416)	(3.746)	(6.331)	(3.746)	(6.331)	
Philippines	02/26/1986	12.938	21.473	23.086	−1.847	−6.884	
		(0.477)	(1.263)	(2.134)	(1.263)	(2.134)	
Philippines	01/19/2001	1.150	16.837	18.469	−5.382	3.581	
		(1.591)	(4.209)	(7.115)	(4.209)	(7.115)	
Thailand	05/25/1992	3.248	−6.574	3.789	−5.085	−10.841	
		(1.433)	(3.793)	(6.411)	(3.793)	(6.411)	
Tunisia	01/31/2011	−2.705	2.982	−11.787	−13.610	−13.445	5
		(0.671)	(1.776)	(3.002)	(1.776)	(3.002)	
Turkey	06/30/1997	2.010	−2.861	−7.629	12.876	4.532	
		(3.015)	(7.976)	(13.481)	(7.976)	(13.481)	
Ukraine	12/28/2004	5.118	12.837	18.445	4.170	32.085	
		(2.797)	(7.401)	(12.511)	(7.401)	(12.511)	
Mean		4.059	8.557	11.941	0.329	4.550	59
		(0.496)	(1.312)	(2.217)	(1.312)	(2.217)	

Notes: Standard errors are in parentheses. "Days to rebound" is the number of trading days following a negative stock return for the national stock index to return to pre-event level (it is calculated if the price decreases on the event day, not if the event day abnormal return is negative). Returns are inflation adjusted.

Philippines in February 1986. Prior to his resignation, the Philippine regime was known for rampant corruption, crony capitalism, extreme inequality, high unemployment, failed import substitution industrialization policy, and oligarchic control of the economy (Overholt 1986; Traywick 2014). In fact, the Philippines was the least preferred site for foreign investment amongst East Asian capitalist economies and possessed one of the worst capital investment to economic output ratios in Asia (Overholt 1986). Marcos held a snap presidential election

on February 7, 1986, in which he declared victory despite overwhelming evidence of electoral fraud. Public protests ensued, and two weeks later the military withdrew its support of the Marcos regime (Lee 2009). Marcos was replaced by his electoral opponent, Corazon Aquino, who had run on a platform of economic liberalization and elimination of crony capitalism (Villegas 1987). This event was associated with an approximately 13% positive event day AR.

By contrast, the largest negative event in our sample (-3%) is the 1993 resignation of President Ghulam Ishaq Khan and Prime Minister Nawaz Sharif in Pakistan. The resignations occurred after months of political infighting when the army demanded the President and Prime Minister resign and call for new elections. An interim prime minister was installed, but uncertainty about Pakistan's political and economic future remained high prior to the next round of elections.

The resignations studied in this paper are those in which leaders left office because of poor performance, public discontent and popular protests. It is therefore not unreasonable to expect the political actions preceding the resignations to have similarly large effects on financial markets.[14] To examine this, we explore all resignations that were driven by significant popular demonstrations, riots, non-violent civil resistance and other forms of public discontent in Public Protests in the appendix.[15] When taking directionality into account, it appears that public protests have no effect on stock returns. However, this occurs because some political movements increase stock prices while others decrease them, and the absolute value of stock returns are approximately 1.5% higher during public protests (see Table A.2).[16]

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[14]Indeed, corporate investors in the 2013 MIGA *World Investment and Political Risk* ranked civil disturbances as the fourth most concerning type of political risk.

[15]The set of resignations includes all those listed in either the Coup d'etat Events Handbook or the Archigos Version 4.1 data set with available financial data. In practice, this is the 2011 Egyptian Revolution and the list of resignations in Table 5.

[16]These results hold when controlling for emerging market index fluctuations.

Exploring possible mechanisms

While markets may generally dislike political instability, the immediate effect of regime changes on markets may not always be unpredictable. For example, investors may generally value democracy if it is perceived to provide stronger property rights and lower susceptibility to capital appropriation (North and Weingast 1989; Przeworski and Wallerstein 1982; Svensson 1998). In addition, when the successor in an irregular regime change is clear, investors may have strong priors about the effect of the new leader on economic and/or market performance. Two possible mechanisms that could be driving the differences may therefore be: (1) whether the regime change is associated with an authoritarian or democratic shift in governance, and (2) whether a new leader is clearly more pro or anti business than their predecessor.

We first attempt to explore these mechanisms by aggregating all of the events in our sample by whether they resulted in a shift in an authoritarian or democratic direction.[17] We find suggestive evidence that regime changes associated with authoritarian shifts are on average perceived negatively by investors (see Table 6), while those that move governance in a democratic direction are on average perceived positively (see Table 7). We refer to this evidence as suggestive despite statistical significance due to the small sample of cases which fit these criteria, particularly with regard to democratic shifts. We observe ten cases associated with an authoritarian shift in governance. Only two of these events result in positive CARs, and neither are significantly different from zero. Five cases resulted in a democratic shift in governance. Three of these five cases result in positive CARs. Of the two negative CARs, one is not significantly different from zero, and the other is associated with a forced market closure that lasted 17 days. However, the majority of the positive returns from democratic regime changes come from the 12% positive CAR associated with the resignation of Ferdinand Marcos in the Philippines in 1986.

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[17]As defined by the Polity project

Table 6: Abnormal returns following authoritarian regime changes

Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
Bangladesh	01/11/2007	−0.320	10.351	14.883	−0.896	2.250	2
		(1.166)	(3.086)	(5.217)	(3.086)	(5.217)	
Egypt	07/03/2013	−0.346	5.169	7.144	6.776	−4.869	2
		(1.515)	(4.009)	(6.776)	(4.009)	(6.776)	
Nepal	10/04/2002	0.090	1.563	5.567	−1.014	−0.493	2
		(1.206)	(3.190)	(5.392)	(3.190)	(5.392)	
Pakistan	10/14/1999	−7.737	−9.431	−7.130	4.151	4.900	36
		(1.943)	(5.141)	(8.690)	(5.141)	(8.690)	
Peru	04/06/1992	−6.819	−5.814	−25.027	−2.075	−10.519	5
		(2.210)	(5.848)	(9.885)	(5.848)	(9.885)	
Thailand	10/06/1976	−0.541	0.837	0.731	0.001	0.713	3
		(0.639)	(1.691)	(2.859)	(1.691)	(2.859)	
Thailand	02/25/1991	−7.326	2.860	14.162	6.326	26.262	7
		(2.884)	(7.631)	(12.899)	(7.631)	(12.899)	
Thailand	09/19/2006	−0.481	−2.640	0.111	1.848	0.131	17
		(1.094)	(2.894)	(4.892)	(2.894)	(4.892)	
Thailand	05/23/2014	−0.571	2.800	4.591	2.350	−0.424	5
		(1.201)	(3.177)	(5.370)	(3.177)	(5.370)	
Turkey	06/30/1997	2.010	−2.861	−7.629	12.876	4.532	
		(3.015)	(7.976)	(13.481)	(7.976)	(13.481)	
Mean		−2.204	0.283	0.740	3.034	2.248	8
		(0.585)	(1.548)	(2.616)	(1.548)	(2.616)	

Notes: Standard errors are in parentheses. "Days to rebound" is the number of trading days following a negative stock return for the national stock index to return to pre-event level (it is calculated if the price decreases on the event day, not if the event day abnormal return is negative). Returns are inflation adjusted.

Table 7: Abnormal returns following democratic regime changes

Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
Indonesia	05/20/1998	2.817	4.296	4.543	−2.695	−17.868	
		(3.392)	(8.974)	(15.168)	(8.974)	(15.168)	
Nepal	04/25/2006	1.915	8.132	9.937	−1.951	−4.205	
		(0.665)	(1.760)	(2.975)	(1.760)	(2.975)	
Philippines	02/26/1986	12.938	21.473	23.086	−1.847	−6.884	
		(0.477)	(1.263)	(2.134)	(1.263)	(2.134)	
Thailand	10/20/1977	−0.951	4.096	7.290	9.961	10.198	2
		(1.232)	(3.260)	(5.510)	(3.260)	(5.510)	
Tunisia	01/31/2011	−2.705	2.982	−11.787	−13.610	−13.445	5
		(0.671)	(1.776)	(3.002)	(1.776)	(3.002)	
Mean		2.803	8.196	6.614	−2.028	−6.441	3
		(0.752)	(1.990)	(3.364)	(1.990)	(3.364)	

Notes: Standard errors are in parentheses. "Days to rebound" is the number of trading days following a negative stock return for the national stock index to return to pre-event level (it is calculated if the price decreases on the event day, not if the event day abnormal return is negative). Returns are inflation adjusted.

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A similar analysis is not possible for shifts from pro or anti business leaders, as examples of such clear and plausibly exogenous shifts in leader economic ideology do not exist in our sample.[18] We therefore look outside of the sample above and conduct an in-depth case study of a seemingly pro-business and anti-socialist coup followed by the reinstatement of a socialist government: the 2002 failed coup against Hugo Chavez in Venezuela.
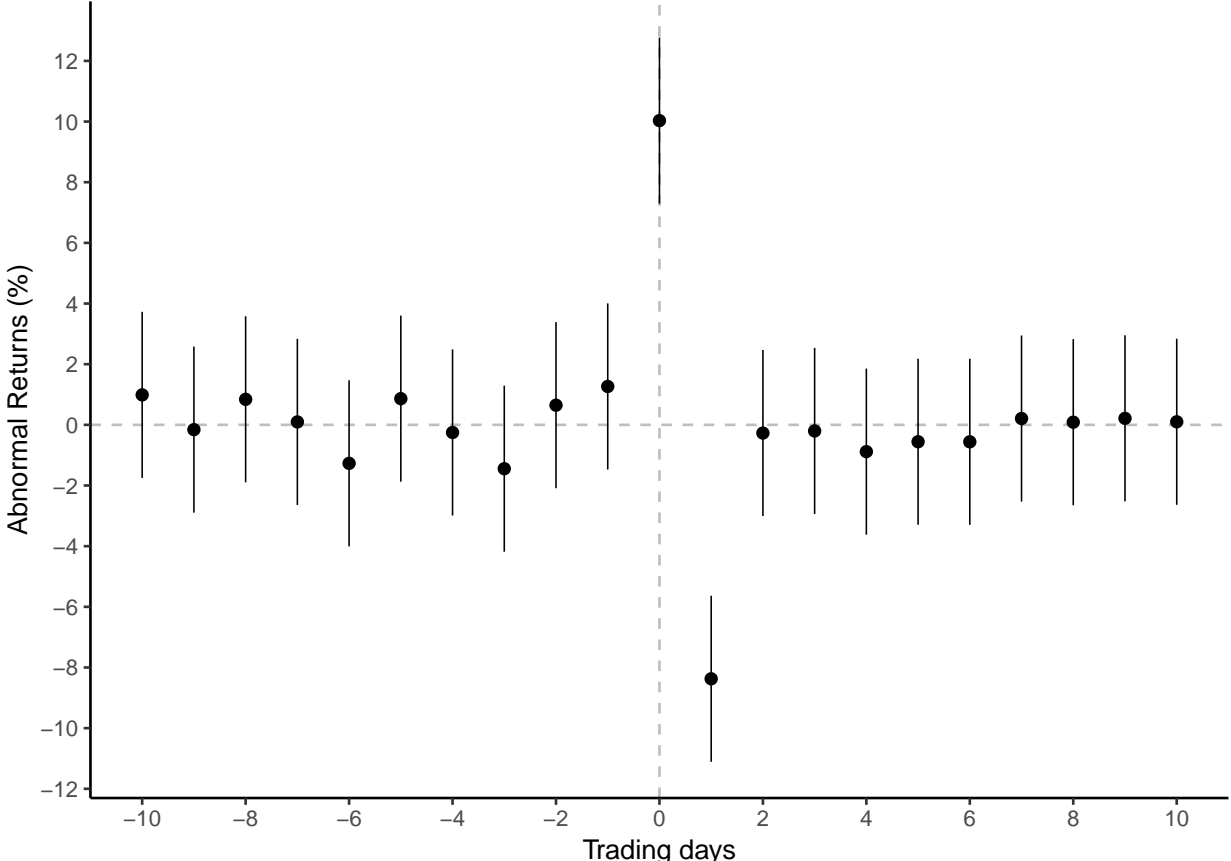

Figure 3: Abnormal returns surrounding the 2002 Venezuelan coup attempt

The ultimately failed Venezuelan coup against Hugo Chavez replaced a left-wing populist government with a new pro-business president, and therefore provides a natural test of the effects of both pro-business and anti-business regime changes separately from simple uncertainty because investors reacted to an expected regime change twice: first, when Chavez was ousted, and second, when he was reinstated. On the evening of April 11, 2002, coup

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[18]Based on matching our cases with codings from the The Ideology of Heads of Government (HOG) database, as well as surveys of news reports on the day of each event. In all cases, no clear economic ideological shift can be identified.

plotters removed Chavez from office and later detained him. Pedro Carmona, a Venezuelan economist and business leader, was named the transitional President of Venezuela. Two days later, on April 13, 2002, a popular uprising led to Chavez's reinstatement as president. This provides an estimate of the market's valuation of a transition from the Chavez regime to the Carmona regime and its valuation of a transition from the Carmona regime back to the Chavez regime. By extension, it provides an estimate of the impact of a shift from a left-wing populist government to a pro business regime in an emerging market.

Figure 3 provides graphical evidence on the effect of the coup attempt. The top panel shows CARs for the 10 days prior to and following the event, along with 95% confidence intervals. The daily ARs and corresponding confidence intervals are displayed in the bottom panel. The abnormal return on April 12, the first trading day in which investors could react to the coup, was +10%. The market reacted in the opposite direction to Chavez's reinstatement as president: the abnormal return on the next trading day, April 15, 2002, was -8%.

The results in Figure 3 are particularly striking given the discrepancy between the ARs on event days 0 and 1 and all other days. Consistent with our earlier findings that coups tend to have pre and post-event CARs that are statistically indistinguishable from zero, the only days on which the 2002 Venezuelan coup d'etat attempt ARs are statistically different from zero is on event days 0 and 1 after the coup attempt. The almost 0% 10-day CAR preceding the coup makes this an ideal case as it implies that investors were completely unaware of the coup plot, increasing our confidence that the abnormal returns capture the true effect of the Chavez to Carmona and Carmona to Chavez regime changes on stock returns. This failed coup therefore demonstrates a large positive market reaction to the attempted overthrow of a socialist leader, and an equally large negative reaction to his reinstatement. More generally, the large magnitudes and precision of these effects suggest that investors primarily value transition to a pro-business government regime, regardless of how the regime change is achieved.

Robustness

There are some potential concerns with the results in the Coups, Assassinations, and Resignations sections. First, the abnormal returns could have been driven by factors unrelated to the regime changes. Second, the true effects of regime changes on firm value may be underestimated if investors had apriori information. Third, the reported means are based on small sample sizes so confidence intervals based on normally distributed abnormal returns may be inappropriate. Finally, for coups, it may also be useful to compare successful coups to unsuccessful events (rather than no coup), as the latter may adjust for selection into unstable events.

We explore these concerns in the following ways. First, we reestimate mean CARs on a set of time-shifted placebo dates, with means computed across all events for each type of regime change. We shift event dates surrounding the actual event date backwards and forwards in increments of five days (-20, 15, 10, 5, 0, 5, 10, 15, and 20 days). In addition, we extend the forward shifted event dates to one year (110, 195, 285, and 365 days) to capture dates that are likely to be completely unaffected by the regime change. The general intuition is that we should not observe significant abnormal returns when performing an identical test on dates where no intervention (i.e. a politically unstable event) occurred. Observing such effects would call the research design and modeling assumptions into question, and raise concerns that the abnormal returns were caused by factors other than the regime changes.

Figure 4 compares mean CARs estimated using the actual event date (Figure 4a) to CARs estimated with the event date shifted 1-year (365 days) into the future (Figure 4b). Figure 4a—which reproduces the tabular results presented in the Coups, Assassinations, and Resignations sections—shows that assassinations and coups are associated with negative event day ARs while resignations are associated with positive event day ARs. In contrast, there are no discernible abnormal returns in Figure 4b. The event day ARs are considerably smaller in magnitude and are not statistically different from zero for either coups or

resignations. Moreover, while CARs estimated using the actual event date for resignations trend upwards following the event day, there is no consistent trend in the placebo analysis. Figure 4 therefore suggests that the main results are not merely an artifact of the data.

To ensure that results of the placebo test based on 1-year did not occur by chance, Figure A.14 plots event-day abnormal against the number of days shifted. There are a few instances in which there are statistically significant (at the 5% level) ARs in the same direction as those on the actual event day, but they are always smaller in magnitude than the ARs estimated using the actual event date. Most of the statistically significant placebo estimates also occur when dates are shifted within the post-event window (days 0-20), a period during which stock returns remain volatile and, in the case of resignations, there is a consistent upward trend in the CARs. When dates are shifted forward further ($\geq$ 110 days), the event day AR is only statistically significant in one case (day 365 for assassinations). Overall, these results reinforce the main results: the ARs on the actual event date capture most of effect of the regime change, although effects can sometimes persist in the short event window following the event date.

These figures also provide evidence on the extent to which regime changes appear to be unexpected. For instance, the CARs prior to assassinations and coups presented in Figure 4a tend to be close to zero, suggesting that investors were unaware that a negative event was likely to occur in the coming days. For resignations, CARs trend downward in the 10 days prior to the event; however, if investors were aware that a resignation were about to occur one would expect the pre-event CARs to be positive given the positive CARs observed in the post-event window. By contrast, a clear break exists between the negative pre-event trend and positive event day jump and post-event trend. For coups, there is suggestive evidence of a negative pre-trend in the run up to the event. However, the overall 7-day and 20-day pre-trends are both insignificant at conventional levels. There is also a much larger jump in negative CARs on the day of the event. This therefore implies that even if investors had some expectation of a negative event occurring, they were unaware of its timing, and at
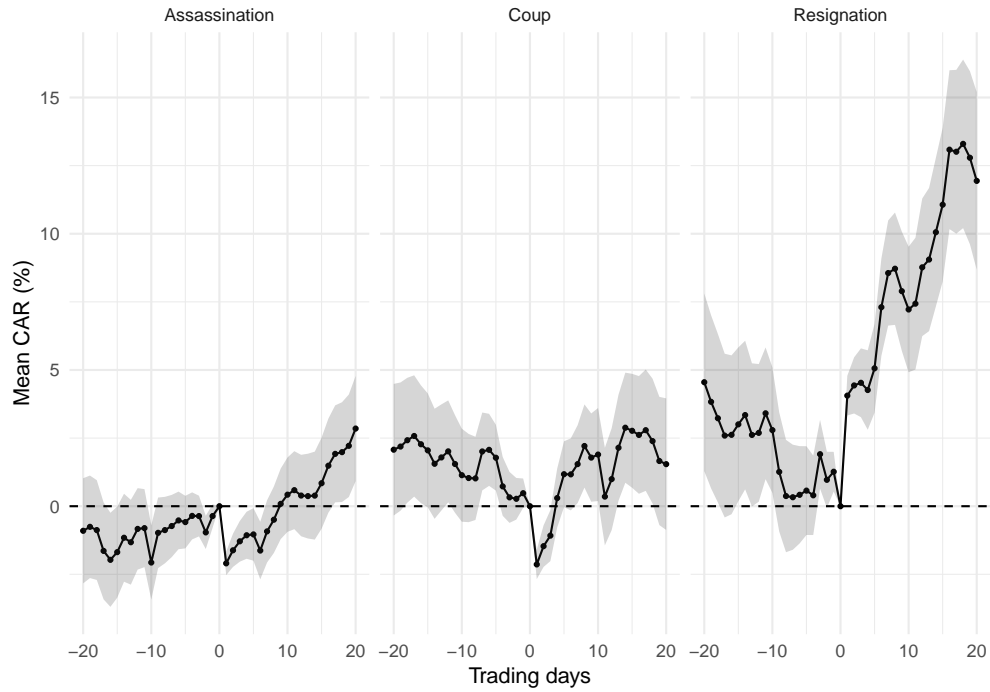
(a) Actual event date
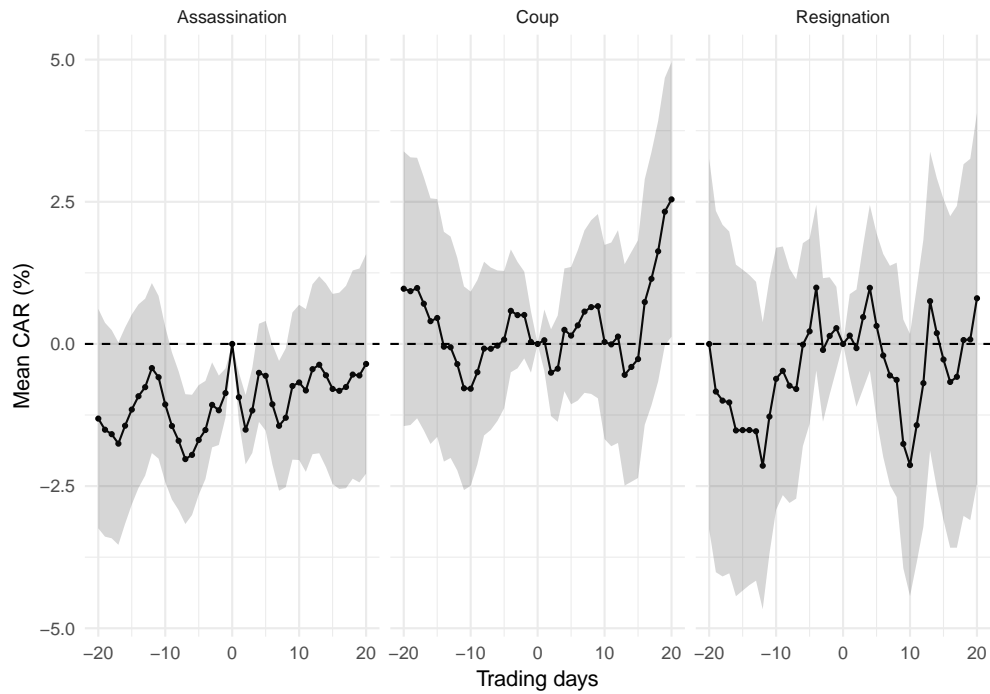
(b) Event date shifted forward by one year

Figure 4: Mean cumulative abnormal returns by type of regime change

worst a portion of the negative change in investment was already priced into the day-of shift. There is thus little evidence that the CARs in the post-event window are not capturing most of the effect caused by the regime changes.

Second, we create a synthetic control portfolio for each event based on the techniques introduced in Abadie and Gardeazabal (2003) and Abadie, Diamond and Hainmueller (2010). This approach creates a "synthetic" time series of daily financial returns based on the returns in a basket of countries which did *not* experience tumultuous political events on the day of the event. We are then able to compare the returns in the country which experienced the unexpected regime change with the actual returns of a reference market—in this case all countries that did not experience an unexpected regime change.[19] Each country is given a weight which represents its influence in the synthetic control portfolio. The weight is chosen so that the daily returns and the variance of the daily returns of the control portfolio and the event country are most similar in the estimation window.[20] The set of possible countries in the control portfolio consists of all countries listed in Table 1. In contrast with the large and significant abnormal returns in the actual countries of study, the returns in the synthetic control portfolio are never significantly different from zero for coups, assassinations, or resignations (or when aggregated together).

Non-parametric statistical techniques that are free from distributional assumptions are used to address concerns about inferences from small sample sizes. We employ the sign and the rank tests, which are based on the sign and the rank of the event day ARs respectively.[21] Both tests are less influenced by departures from normality than statistics based on traditional t-tests such as those reported earlier in this paper. Table 8 compares event day ARs as well as "abnormal absolute returns" between the event country and the syn-

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[19]Greater political risk is associated with higher within-country financial volatility (Boutchkova et al. 2012). As our synthetic control portfolio contains data from countries at both high and low levels of general political risk, some countries in the synthetic control reference market have higher levels of baseline financial volatility than an event country, while others have lower levels of baseline volatility. Note, however, that this does not impact the main event study estimates, as the relevant comparison is the financial returns on the event day and *within*-country financial volatility in the period preceding the event.

[20]See "Synthetic Control Portfolio" in the Appendix for mathematical formalization.

[21]See section 8 in MacKinlay (1997) for more details.

thetic control portfolio using the non-parametric methods discussed above. The "abnormal absolute returns" are abnormal returns for the absolute value of stock returns. This is done to combine events since resignations tend to increase returns while assassinations and coups tend to decrease them. The idea that the absolute value of returns might increase during irregular regime changes is similar to the finding that volatility increases and is consistent with Figure 1.

Table 8: Non-parametric tests of the impact of regime changes

Event Type	Regime Change Country			Synthetic Control Portfolio			Wilcoxon Rank Test p-Value
	Mean CAR (0,0)	Rank p-value	Sign p-value	Mean CAR (0,0)	Rank p-value	Sign p-value	
Coups	−2.137	0.006	0.022	0.024	0.702	1.000	0.002
Assassinations	−2.098	0.001	0.070	−0.125	0.255	0.453	0.078
Resignations	4.059	0.010	0.118	0.366	0.778	0.607	0.048
All (Absolute Value)	2.410	0.002	0.033	−0.079	0.879	0.955	0.000

Notes: Estimates for assassinations do not include the assassination of U.S. president William McKinley in 1901 because no control portfolios are available.

As shown in Table 8, the mean event day abnormal returns for coups, assassinations and resignations are all statistically different from zero at the 1% level using the rank test statistic and the abnormal returns for coups and assassinations are significant at at least the 10% level using the sign test. In addition, abnormal absolute returns for all events are statistically significant at at least the 5% level using both the rank and sign tests. On the other hand, the event day abnormal returns for the control portfolio are never statistically different from zero at even the 10% level using the rank or sign tests. Finally, the difference in means between the regime change country and the control portfolio are statistically different from zero for coups (1% level), assassinations (10% level), resignations (5% level), and all events combined (1% level) when using two-sided p-values from the Wilcoxon rank test.[22] In sum, the synthetic control and small sample tests suggest that the main results are not a result of deviations from normality or confounding world events.

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[22]The Wilcoxon rank test is a non-parametric statistical technique that can be used to compare differences between matched samples.

Finally, we supplement our list of successful coups with a list of failed coups from the Colpus data set (Chin, Carter and Wright 2021) and show robustness to including and excluding ambiguous cases by reestimating our models while also including failed coups. This analysis demonstrates that including failed coups reduces the magnitude of the negative effect of coups overall, but that the estimates remain negative and statistically significant (see Table A.7). This result is clarified by analyzing failed coups independently of successful coups, which reveals a slightly negative but null impact of failed coups on returns, suggesting that ambiguous cases and plots tend not to have the same level of directed impact on average as successful regime changes (see Table A.6).

Discussion and Conclusion

While conventional wisdom suggests investors dislike unexpected regime changes, we show that this is not necessarily always the case. Unexpected changes in ruler virtually always increase market volatility, but the directionality is not always negative as markets can be given a boost when a new regime is expected to offer a more stable, democratic, or pro-business environment than the previous one.

Coups and other types of regime changes remain common, highlighting their relevance for economic and political development. Our sample consists of 5 coups, 1 assassination, 7 resignations, and 7 instances of public protect since 2000. The Arab spring is perhaps the most notable, with protests in response to oppressive regimes and low living standards spreading throughout the Middle East in late 2010. There have also been a number of failed coups such as the 2002 coup attempt against Hugo Chavez and the 2016 failed coup in Turkey.[23] Yet despite their frequency there is little evidence on their economic consequences.

This paper helps fill the evidence gap by using an event study approach that exploits daily returns of national stock market indices. This approach provides well-identified estimates of the effect of regime changes on investment that is less susceptible to endogeneity bias than

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[23]The Turkish coup attempt led to negative event-day CARs of approximately -7%. See Figure A2 for a visual depiction.

prior cross country studies. Furthermore, the large sample of political events in our study increases the generalizability of our findings.

The results are consistent with the idea that perceptions of government competence and changes in government have large impacts on investor confidence. But although the effect of regime changes and protests on stock volatility is substantial, the effect on the direction of stock returns is not uniformly negative. Abnormal returns following resignations are large and positive (+4%), abnormal returns following assassinations are negative and smaller in magnitude (-2%), and abnormal returns following coups also tend to be negative (-2%). Our examination of pre-event trends in abnormal returns suggests that the positive returns we observe following resignations are not driven by investors anticipating resignations, but not coups or assassinations. CARs trend downward in the days preceding resignations, but if investors anticipated a resignation that brought a more competent leader and increased stability, pre-event CARs should also trend positive.

A test of mechanisms suggests that democratic regime changes are typically preferable to authoritarian regime changes to investors. However, the returns surrounding the failed 2002 coup that temporarily ousted Hugo Chavez from power in Venezuela show that even democratically subversive coups can have positive effects if the instigators are clearly pro-business. These results are consistent with previous research showing that the coup replacing Allende in Chile increased stock market valuations (Girardi and Bowles 2018).

Our findings have a number of potential policy implications. First, our finding that even democratically subversive irregular regime changes can have a positive impact on investment when the replacement government is clearly pro-business implies that investor goals and actions may be at odds with regime stability. Second, the immediate nature and large magnitude of the financial outflows we observe in the wake of the majority of coups and assassinations suggests that a weakened financial system and economy are likely to accompany these kinds of regime changes. More optimistically, however, we also find suggestive evidence that in the event of a democratic regime change or revolution, clearly signaling a

commitment to democracy may result in increased investment in a country's firms.

There are a number potential avenues for future research. First, more research is needed to identify the pro and anti market characteristics of regime changes. There may be pro or anti market features of regime changes that are more nuanced than those identified in this paper. Similarly, it would be useful to identify additional mechanisms through which regime changes effect investment. In the case of Chile, Girardi and Bowles (2018) show that increasing stock market valuations were caused by changes in private property rights rather than economic growth prospects or wage costs. Research focusing on the mechanisms in other settings would help generalize these findings. Second, it remains unclear how markets react to successful irregular regime change conditional on attempt. A future study could therefore examine how markets react to successful assassinations or coups when compared to failed attempts. Lastly, it would be helpful to determine the extent to which stock market returns translate to broader economic development outcomes. Meyersson (2016) has made progress on this front by examining the impact of coups on a number of outcomes in addition to economic growth including investment, debt, inflation, infant mortality, and years of schooling. It would be fruitful to examine whether the direction of the effects of different types of regime changes on these outcomes are consistent with their stock market effects, or if investor perceptions are at odds with certain development goals. Such research can help enlarge the body of evidence on the extent to which regime changes cause institutional and political change, and, in turn, have significant consequences for economic development.

References

Abadie, Alberto, Alexis Diamond and Jens Hainmueller. 2010. "Synthetic control methods for comparative case studies: Estimating the effect of Californias tobacco control program." *Journal of the American Statistical Association* 105(490).

Abadie, Alberto and Javier Gardeazabal. 2003. "The economic costs of conflict: A case study of the Basque Country." *American economic review* pp. 113–132.

Aisen, Ari and Francisco José Veiga. 2013. "How does political instability affect economic growth?" *European Journal of Political Economy* 29:151–167.

Alesina, A. and R. Perotti. 1996. "Income distribution, political instability, and investment." *European Economic Review* 40(6):1203–1228.

Alesina, A., S. Özler, N. Roubini and P. Swagel. 1996. "Political instability and economic growth." *Journal of Economic Growth* 1(2):189–211.

Baker, Scott R, Nicholas Bloom and Steven J Davis. 2016. "Measuring economic policy uncertainty." *The Quarterly Journal of Economics* 131(4):1593–1636.

Barro, Robert J. 1991. "Economic growth in a cross section of countries." *The quarterly journal of economics* 106(2):407–443.

Boutchkova, Maria, Hitesh Doshi, Art Durnev and Alexander Molchanov. 2012. "Precarious politics and return volatility." *The Review of Financial Studies* 25(4):1111–1154.

Campbell, J.Y., A.W. Lo and A.C. MacKinlay. 1997. *The econometrics of financial markets.* Vol. 1 princeton University press Princeton, NJ.

Chin, John J, David B Carter and Joseph G Wright. 2021. "The varieties of Coups D'etat: Introducing the Colpus dataset." *International Studies Quarterly* 65(4):1040–1051.

Cohen, Benjamin H, Dietrich Domanski, Ingo Fender and Hyun Song Shin. 2017. "Global liquidity: a selective review." *Annual Review of Economics* 9:587–612.

DellaVigna, S.D. and E. La Ferrara. 2010. "Detecting Illegal Arms Trade." *American Economic Journal: Economic Policy* pp. 26–57.

Derpanopoulos, G., E. Frantz, B. Geddes and J. Wright. 2016. "Are coups good for democracy." *Research and Politics* pp. 1–7.

Devereux, M.B. and J.F. Wen. 1998. "Political instability, capital taxation, and growth." *European Economic Review* 42(9):1635–1651.

Dube, A., E. Kaplan and S. Naidu. 2011. "Coups, Corporations, and Classified Information." *The Quarterly Journal of Economics* 126(3):1375–1409.

Faccio, M. 2006. "Politically connected firms." *The American economic review* 96(1):369–386.

Fama, Eugene F. 1965. "The behavior of stock-market prices." *The journal of Business* 38(1):34–105.

Fisman, R. 2001. "Estimating the value of political connections." *The American Economic Review* 91(4):1095–1102.

Fosu, Augustin Kwasi. 1992. "Political instability and economic growth: evidence from Sub-Saharan Africa." *Economic Development and Cultural Change* 40(4):829–841.

Girardi, Daniele and Samuel Bowles. 2018. "Institution shocks and economic outcomes: Allende's election, Pinochet's coup and the Santiago stock market." *Journal of Development Economics* 134:16–27.

Goldman, E., J. Rocholl and J. So. 2009. "Do politically connected boards affect firm value?" *Review of Financial Studies* 22(6):2331–2360.

Guidolin, M. and E. La Ferrara. 2007. "Diamonds Are Forever, Wars Are Not: Is Conflict Bad for Private Firms?" *The American Economic Review* 97(5):1978–1993.

Gupta, Dipak K. 1990. *The economics of political violence: The effect of political instability on economic growth.* Praeger.

Irshad, Hira. 2017. "Relationship among political instability, stock market returns and stock market volatility." *Studies in business and economics* 12(2):70–99.

Jensen, Nathan M and Scott Schmith. 2005. "Market Responses to Politics The Rise of Lula and the Decline of the Brazilian Stock Market." *Comparative Political Studies*

38(10):1245–1270.

Jones, B.F. and B.A. Olken. 2009. "Hit or miss? The effect of assassinations on institutions and war." *American Economic Journal: Macroeconomics* pp. 55–87.

Jong-A-Pin, Richard. 2009. "On the measurement of political instability and its impact on economic growth." *European Journal of Political Economy* 25(1):15–29.

Koepke, Robin. 2019. "What drives capital flows to emerging markets? A survey of the empirical literature." *Journal of Economic Surveys* 33(2):516–540.

Le, Quan Vu and Paul J Zak. 2006. "Political risk and capital flight." *Journal of International Money and Finance* 25(2):308–329.

Leblang, David and Bumba Mukherjee. 2005. "Government partisanship, elections, and the stock market: examining American and British stock returns, 1930–2000." *American Journal of Political Science* 49(4):780–802.

Lee, Terence. 2009. "The armed forces and transitions from authoritarian rule: Explaining the role of the military in 1986 Philippines and 1998 Indonesia." *Comparative Political Studies* 42(5):640–669.

Lehkonen, Heikki and Kari Heimonen. 2015. "Democracy, political risks and stock market performance." *Journal of International Money and Finance* 59:77–99.

Lensink, Robert, Niels Hermes and Victor Murinde. 2000. "Capital flight and political risk." *Journal of international Money and Finance* 19(1):73–92.

Liu, Li and Tao Zhang. 2015. "Economic policy uncertainty and stock market volatility." *Finance Research Letters* 15:99–105.

Londregan, J.B. and K.T. Poole. 1990. "Poverty, the coup trap, and the seizure of executive power." *World Politics* 42(02):151–183.

MacKinlay, A.C. 1997. "Event studies in economics and finance." *Journal of economic literature* 35(1):13–39.

Marinov, Nikolay and Hein Goemans. 2014. "Coups and democracy." *British Journal of Political Science* 44(4):799–825.

Meyersson, Erik. 2016. "Political man on horseback: coups and development." *Stockholm Institute for Transition Economics (SITE)* 5.

Needler, M.C. 1966. "Political development and military intervention in Latin America." *The American Political Science Review* 60(3):616–626.

North, Douglass C and Barry R Weingast. 1989. "Constitutions and commitment: the evolution of institutions governing public choice in seventeenth-century England." *The journal of economic history* 49(4):803–832.

Obstfeld, Maurice. 2012. "Financial flows, financial crises, and global imbalances." *Journal of International Money and Finance* 31(3):469–480.

Overholt, William H. 1986. "The rise and fall of Ferdinand Marcos." *Asian Survey* 26(11):1137–1163.

Powell, Jonathan M and Clayton L Thyne. 2011. "Global instances of coups from 1950 to 2010: A new dataset." *Journal of Peace Research* 48(2):249–259.

Przeworski, Adam and Michael Wallerstein. 1982. "The structure of class conflict in democratic capitalist societies." *American Political Science Review* 76(2):215–238.

Roe, M.J. and J.I. Siegel. 2011. "Political instability: Effects on financial development, roots in the severity of economic inequality." *Journal of Comparative Economics* .

Samuelson, Paul. 1965. "Proof that properly anticipated prices fluctuate randomly." *Industrial Management Review* 6:41–50.

Svensson, J. 1998. "Investment, property rights and political instability: Theory and evidence." *European Economic Review* 42(7):1317–1341.

Thyne, Clayton L and Jonathan M Powell. 2016. "Coup d?état or Coup d'Autocracy? How Coups Impact Democratization, 1950–2008." *Foreign Policy Analysis* 12(2):192–213.

Traywick, Catherine. 2014. "Shoes, Jewels, and Monets: The Immense Ill-Gotten Wealth of Imelda Marcos." *Foreign Policy* .

Varol, Ozan O. 2011. "The democratic coup d?état." *Harvard Journal of International Law* .

Venieris, Yiannis P and Dipak K Gupta. 1986. "Income distribution and sociopolitical instability as determinants of savings: a cross-sectional model." *Journal of Political Economy* 94(4):873–883.

Villegas, Bernardo M. 1987. "The Philippines in 1986: Democratic Reconstruction in the Post-Marcos Era." *Asian Survey* 27(2):194–205.

World Investment and Political Risk. 2011. World Bank Group Multilateral Investment Guarantee Agency.

World Investment and Political Risk. 2012. World Bank Group Multilateral Investment Guarantee Agency.

World Investment and Political Risk. 2013. World Bank Group Multilateral Investment Guarantee Agency.

Supplementary Appendix:

Are regime changes always bad economics? Evidence from daily financial data

A Appendix

Contents

Public Protests

The resignations studied in this paper are those in which leaders left office because of poor performance, public discontent and popular protests. It is therefore not unreasonable to expect the political actions preceding the resignations to have similarly large effects on financial markets.[24] To examine this, we explore all resignations that were driven by significant popular demonstrations, riots, non-violent civil resistance and other forms of public discontent (see Table A.1).[25]

Table A.1: List of public protests preceding resignations

Country	Name	Start Date	End Date
Philippines	EDSA 1/Yellow Revolution	2/22/1986	2/25/1986
Bangladesh	Bangladeshi Spring of 1990	11/27/1990	12/7/1990
Thailand	Black May	5/17/1992	5/20/1992
Indonesia	Indonesian Riots	5/12/1998	5/21/1998
Philippines	EDSA II	1/17/2001	1/20/2001
Argentina	Argentina Riots	12/16/2001	12/20/2001
Ukraine	Orange Revolution	11/22/2004	1/23/2005
Ecuador	Ecuadorian Protests	4/13/2005	4/20/2005
Nepal	Nepalese People's Revolution	4/6/2006	4/24/2006
Tunisia	Tunisian Revolution	12/18/2010	1/14/2011
Egypt	Egyptian Revolution	1/25/2011	2/11/2001

A recent example of a popular uprising preceding a resignation is the 2011 Egyptian Revolution that resulted in the overthrow of President Hosni Mubarak's regime.[26] Clashes between security forces and protestors led to the deaths of hundreds of citizens and injuries to thousands more. The uprising began on January 25, 2011 when millions of protestors demanded the overthrow of the Egyptian leadership. Examples of public discontent included demonstrations, marches, riots, non-violent civil disobedience, and labor strikes.

The short-term impact of the Egyptian Revolution on the economy was disastrous. As

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[24]Indeed, corporate investors in the 2013 MIGA *World Investment and Political Risk* ranked civil disturbances as the fourth most concerning type of political risk.

[25]The set of resignations includes all those listed in either the Coup d'etat Events Handbook or the Archigos Version 4.1 data set with available financial data. In practice, this is the 2011 Egyptian Revolution and the list of resignations in Table 5.

[26]Abnormal returns for this event are not shown in Table 5 because the stock market was closed on the day of Mubarak's resignation.

shown in Figure A.9, abnormal returns on the Egyptian Stock Exchange Index (EGX 30) were around -7% on January 26th and -10% the day after. To prevent further decline during the uprising, the Egyptian Stock Exchange closed at the end of trading on January 27th. President Mubarak resigned on February 11, but the market remained closed until March 23, when CARs declined by another 9%, before rebounding slightly thereafter.
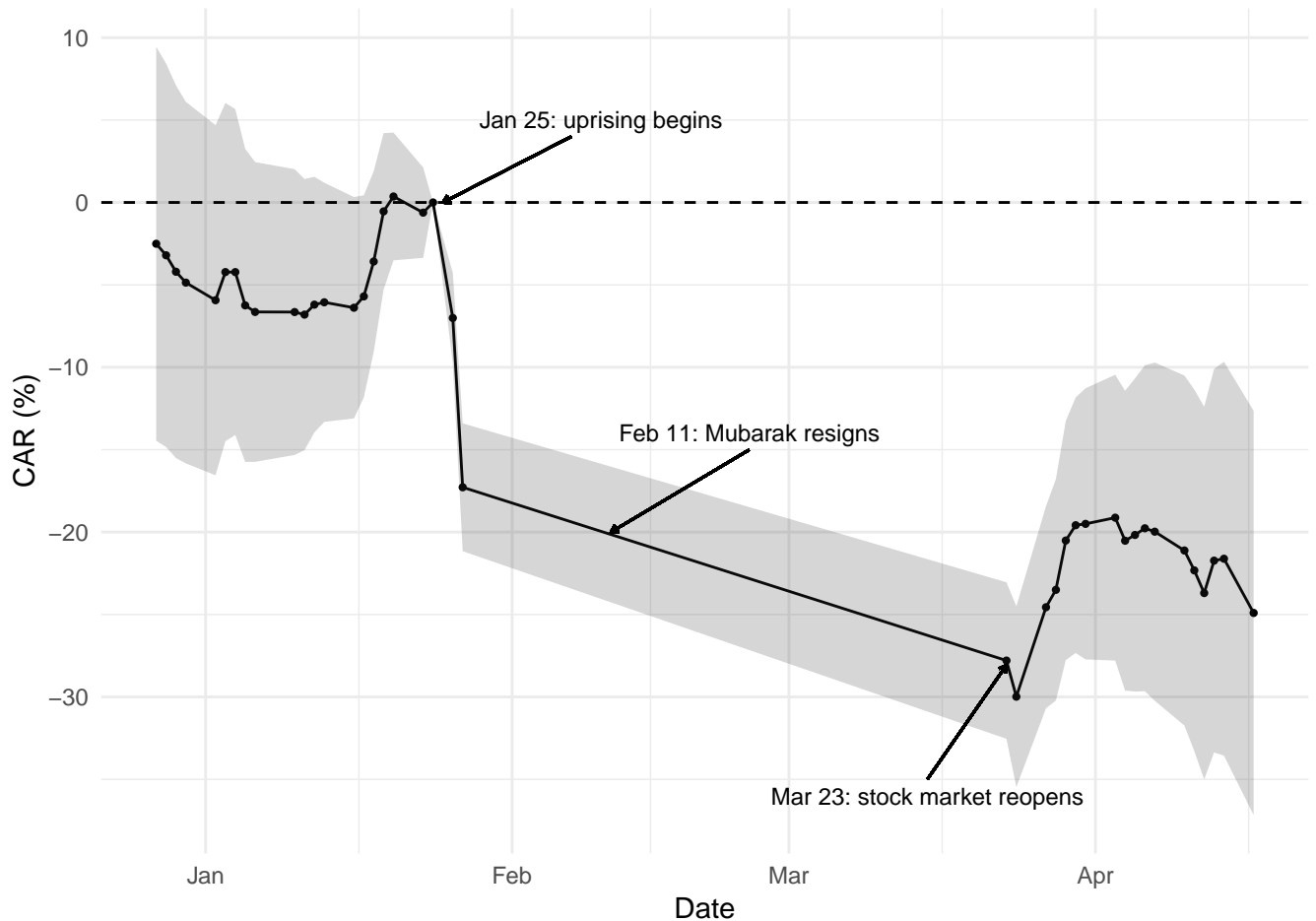
Figure A.1: Cumulative abnormal returns during the Egyptian revolution

An important question is whether other popular uprisings have had similar adverse economic consequences. To examine this, we explore all resignations that were driven by significant public protests.[27] Public protests include popular demonstrations, riots, non-violent civil resistance and other forms of public discontent. We find that both volatility and the

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[27]The set of resignations includes all those listed in either the Coup d'etat Events Handbook or the Archigos Version 4.1 data set with available financial data. In practice, this is the 2011 Egyptian Revolution and the list or resignations in Table 5.

absolute value of returns increase during times of protest. Similarly to coups, however, the direction of returns is dependent upon the nature of the protest in question.

The start and end dates in Table A.2 are the dates that protests began and leader's resigned respectively. Resignations caused by popular uprisings were identified by examining the descriptions in the Coup d'etat Events Handbook and Archigos Version 4.1. Additional Lexis Nexis searches were used to verify these descriptions.

In Table A.2, we examine whether public protests influence stock prices. The variable *Protest* is equal to 1 during the dates in which citizens participate in political activities demanding the resignation of the executive and 0 otherwise. Non-protest dates are the 250 days prior to the start dates and after the end dates listed in Table A.1.[28]

Column (1) suggests that public protests have no effect on stock returns. However, this occurs because some political movements increase stock prices while others decrease them. As shown in column (2), the absolute value of stock returns are approximately 1.5% higher during public protests. These estimates would be biased if protest dates are correlated with higher world or regional stock market indices. To address this potential confounder, column (3) controls for returns on the S&P/IFC Emerging Markets Investable Composite Stock Index. The coefficient on *Protest* barely changes and the absolute value of returns are still about 1.5% higher during public protests. Finally, column (4) shows that stock volatility is approximately 1 percentage point higher during political movements.[29]

We therefore find that both volatility and the absolute value of returns increase during times of protest. Similarly to coups, however, the direction of returns is dependent upon the nature of the protest in question.

In addition, we independently plot the CARs during each period of protest preceding a resignation for each event.[30] This analysis also shows that volatility and the absolute value

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[28]The volatility estimates used as the dependent variable in column (4) are estimated on the 250 days prior to the start date, the protest dates, and the 250 days following the end date.

[29]Volatility estimation methodology is described in detail in Volatility.

[30]An expception is the 1998 Yellow Revolution in the Philippines, as markets remained closed from the start of the protest until after Marcos' resignation

of returns increase during times of protest, but also reveals that the resignations themselves typically constitute distinct events that are clearly distinguishable from the general period of protest.

Table A.2: Effect of public protests on stock prices

	Returns	Absolute Value of Returns		Volatility
	(1)	(2)	(3)	(4)
Protest	0.261	1.485	1.313	0.891
	(0.700)	(0.412)	(0.387)	(0.346)
Emerging market index			0.075	
			(0.058)	
Event fixed effect?	Yes	Yes	Yes	Yes
Observations	3,537	3,537	2,676	3,537
Events	11	11	8	11

Notes: Standard errors clustered by event are in parentheses.
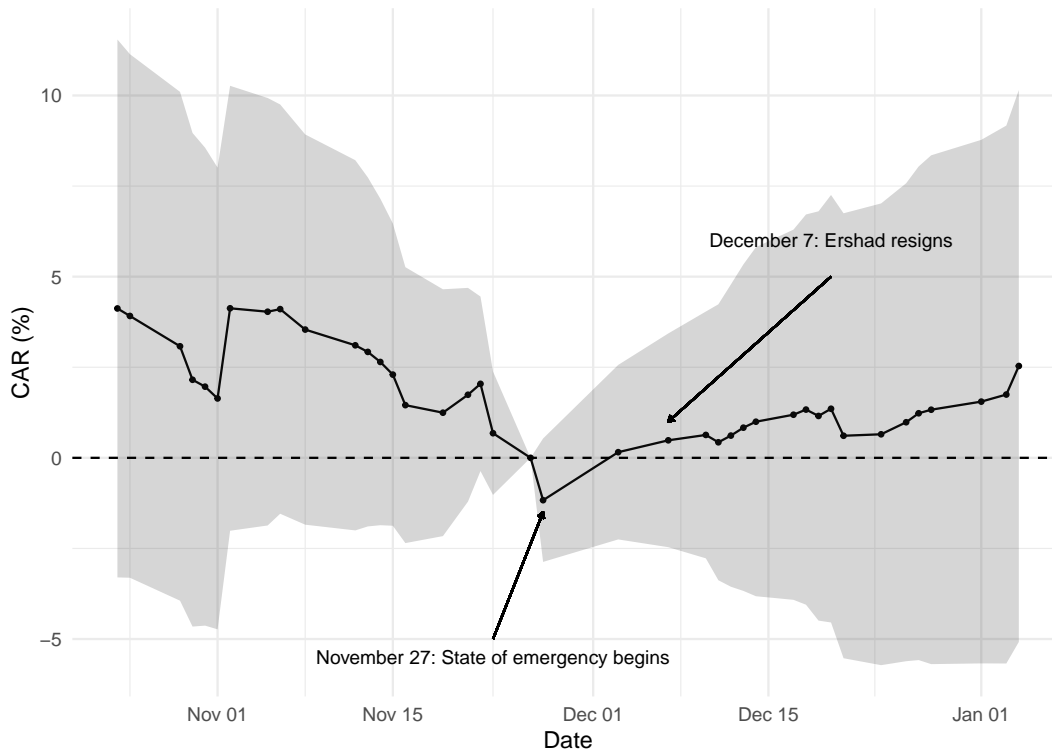
Figure A.2: CARs during the 1990 Bangladesh uprising

A5
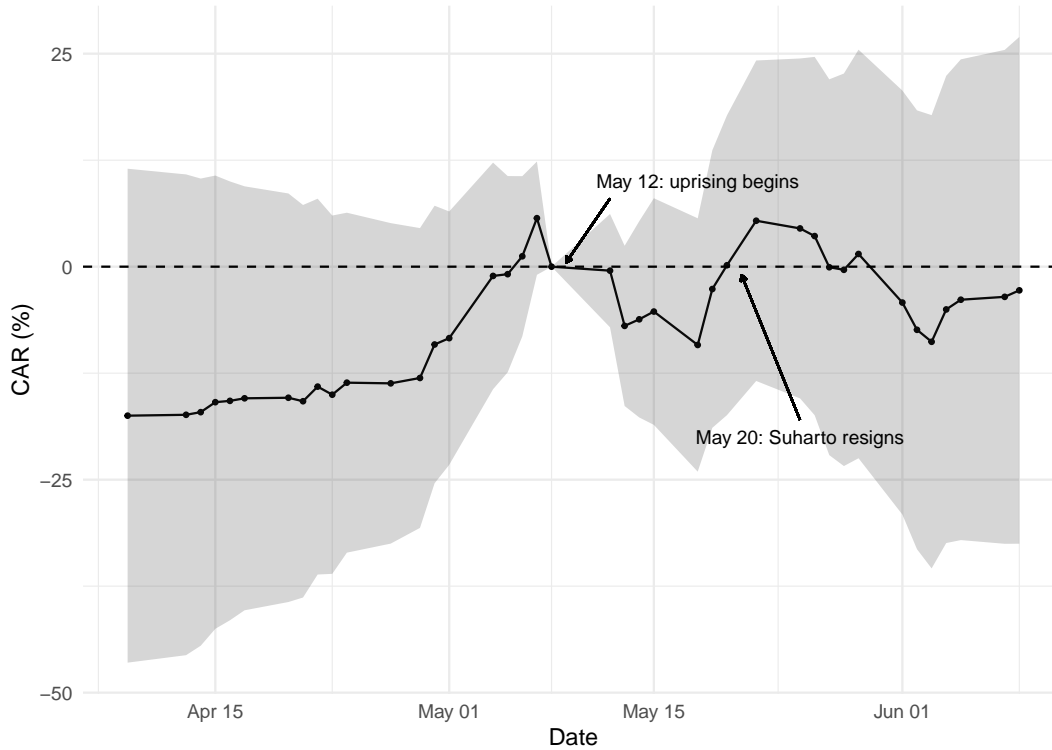
Figure A.3: CARs during the 1998 Indonesian revolution
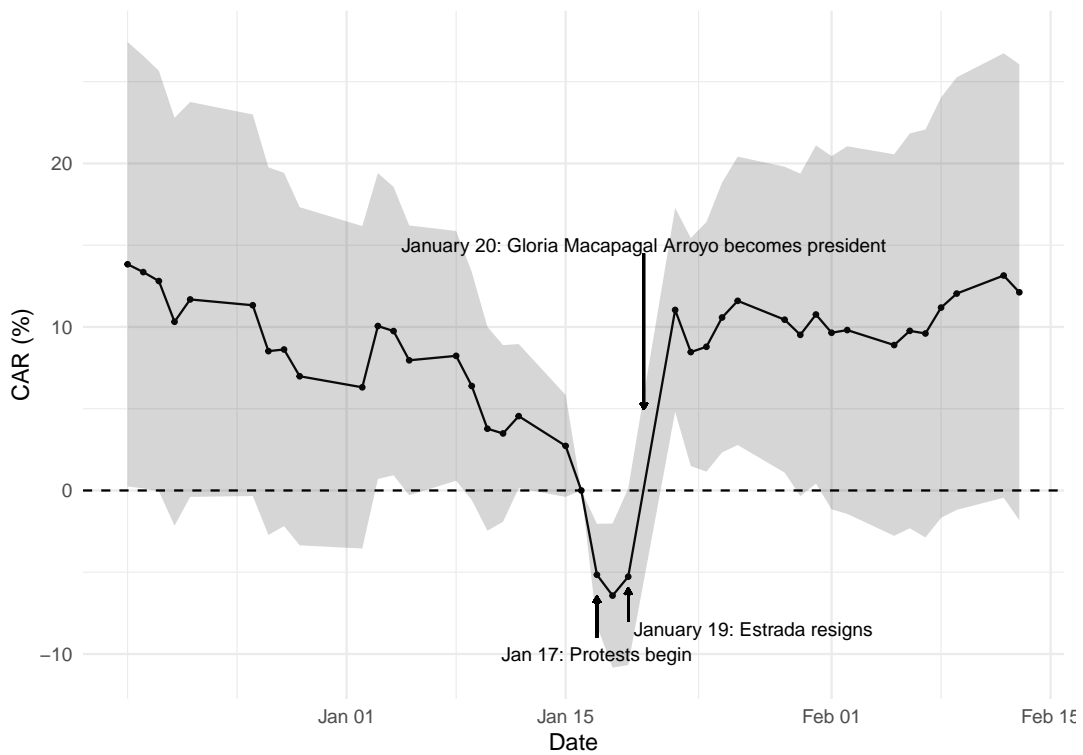
Figure A.4: CARs during the Philippines Second People Power Revolution
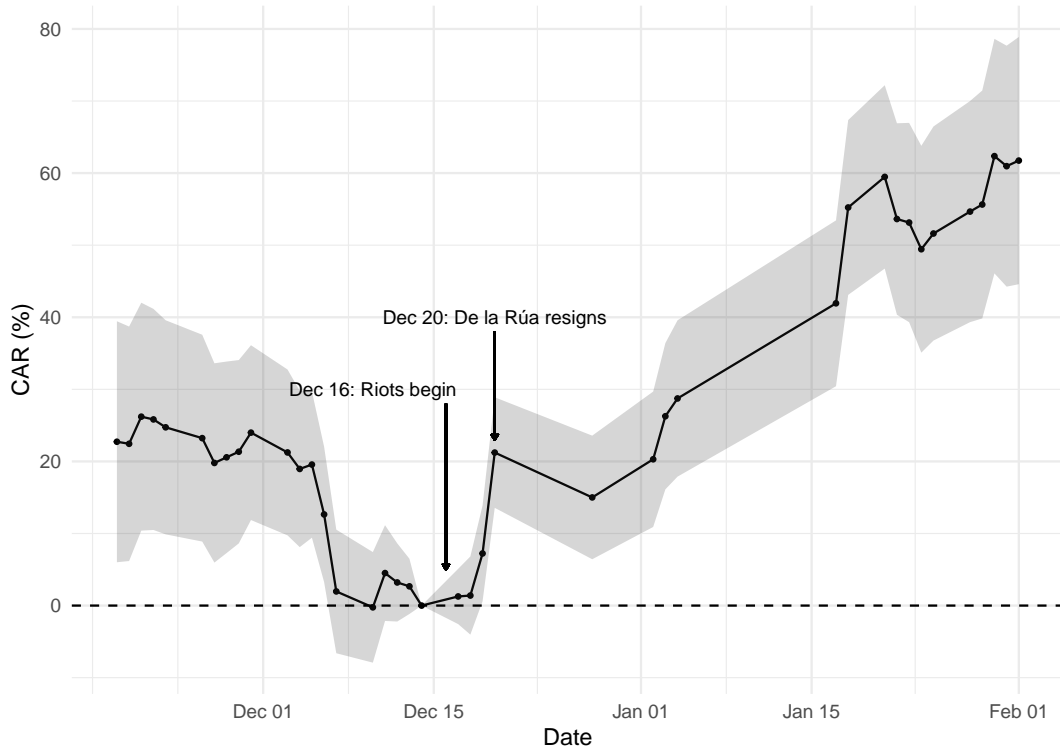
Figure A.5: CARs during the 2001 Argentine crisis
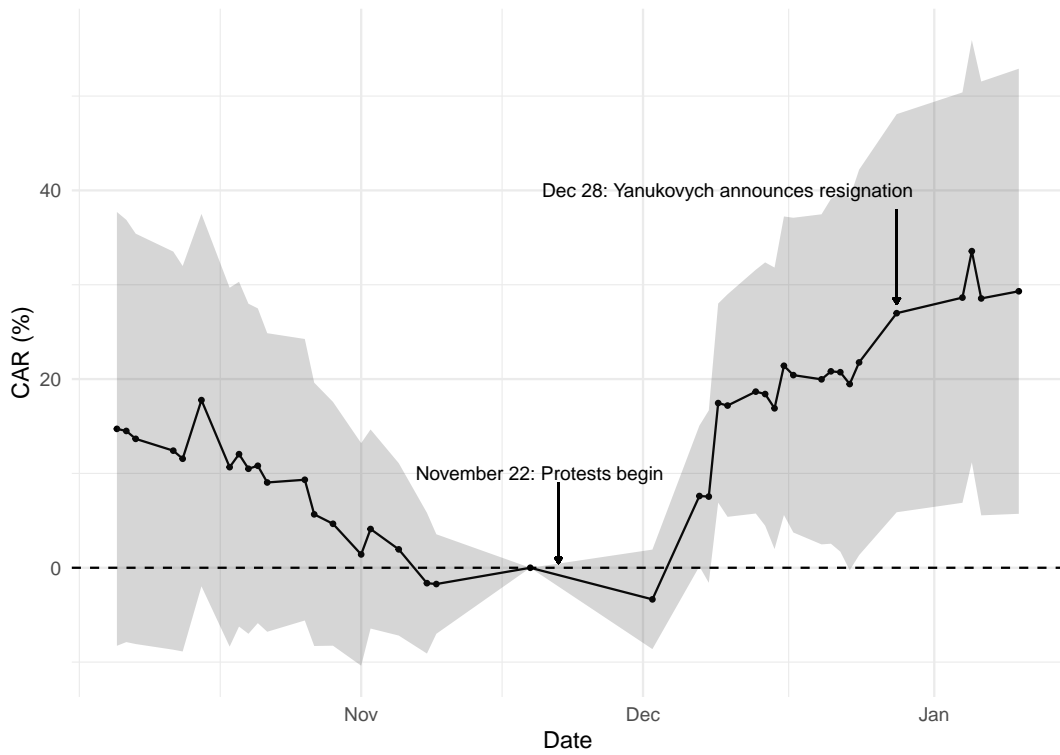
Figure A.6: CARs during the 2004 Orange Revolution
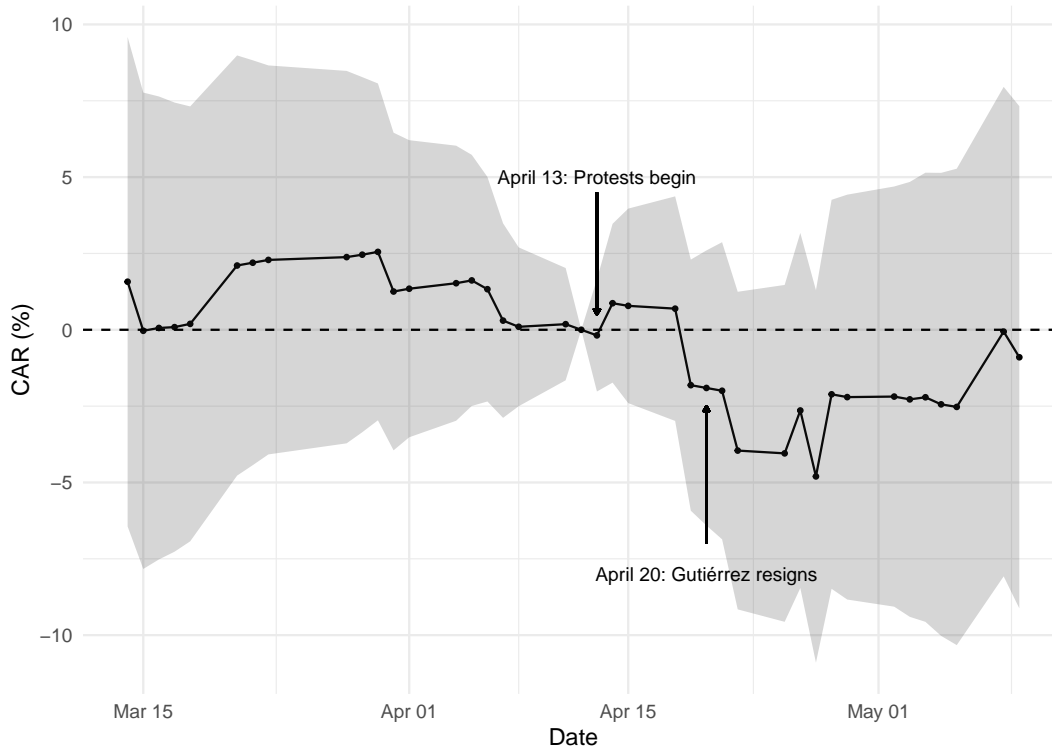
Figure A.7: CARs during the Ecuadorian Revolution of 2005
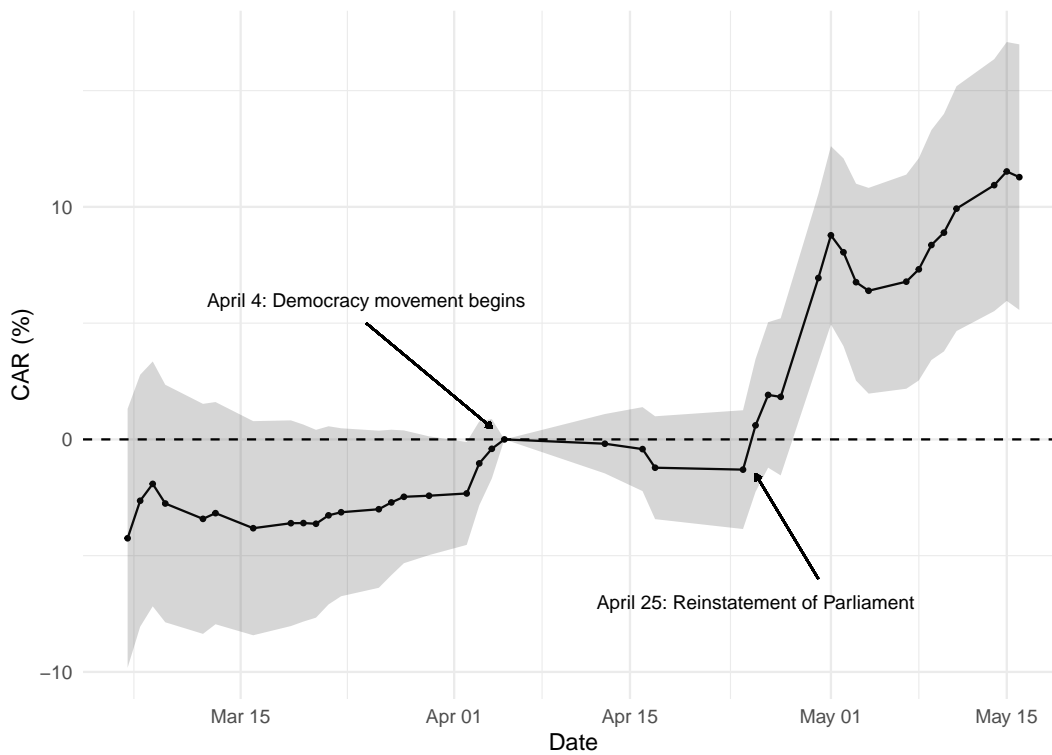
Figure A.8: CARs during the 2006 Nepalese Democracy Movement
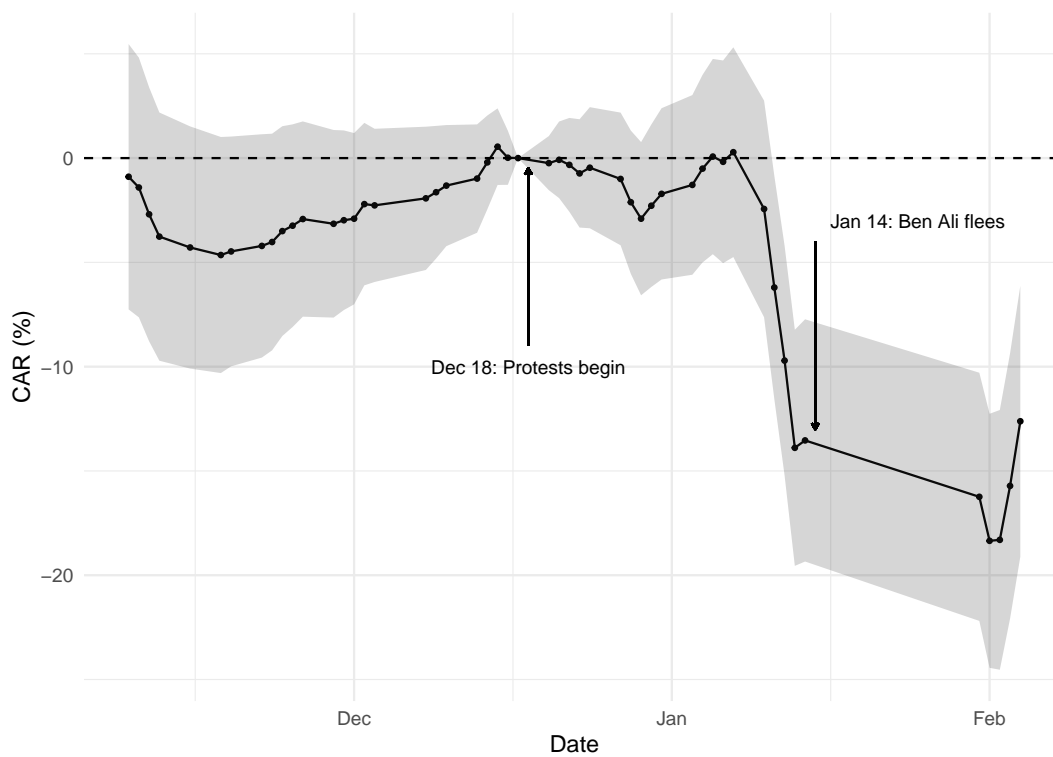
Figure A.9: CARs during the 2011 Tunisian Revolution

Additional robustness tests

Volatility
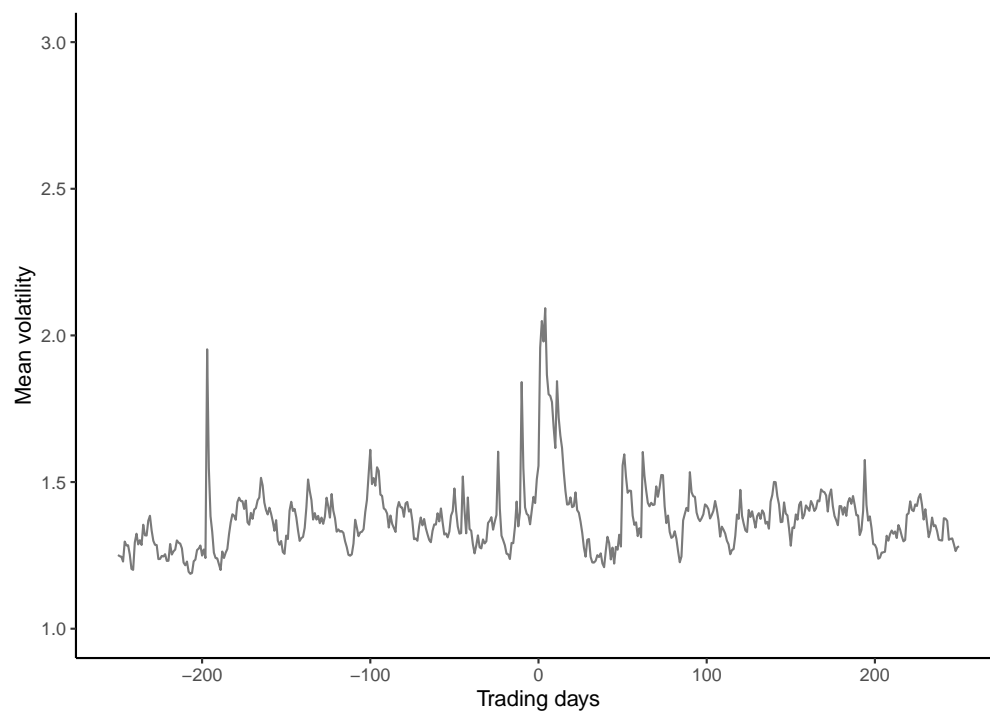
Figure A.10: **Mean of volatility estimates from exponential GARCH models**
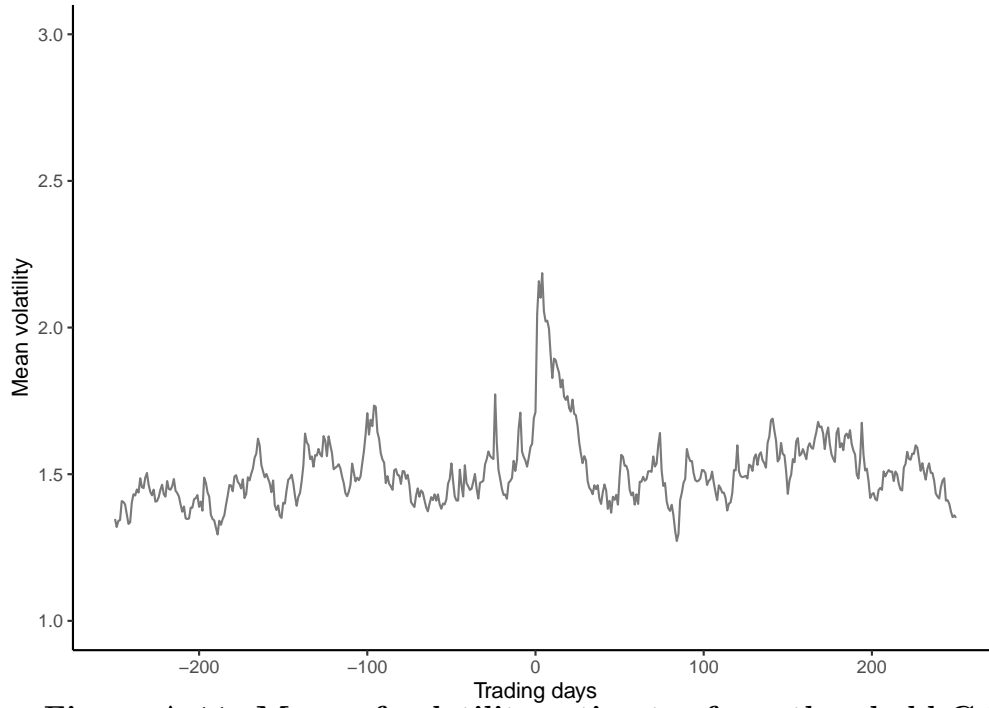
Figure A.11: Mean of volatility estimates from threshold GARCH models
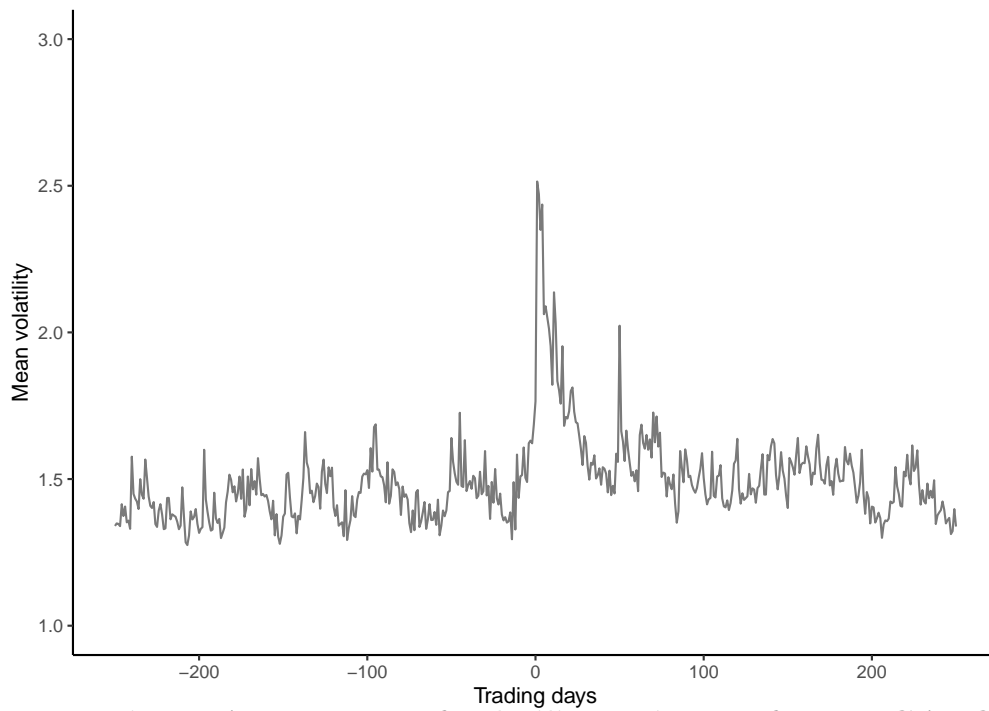
Figure A.12: Mean of volatility estimates from FIGARCH models
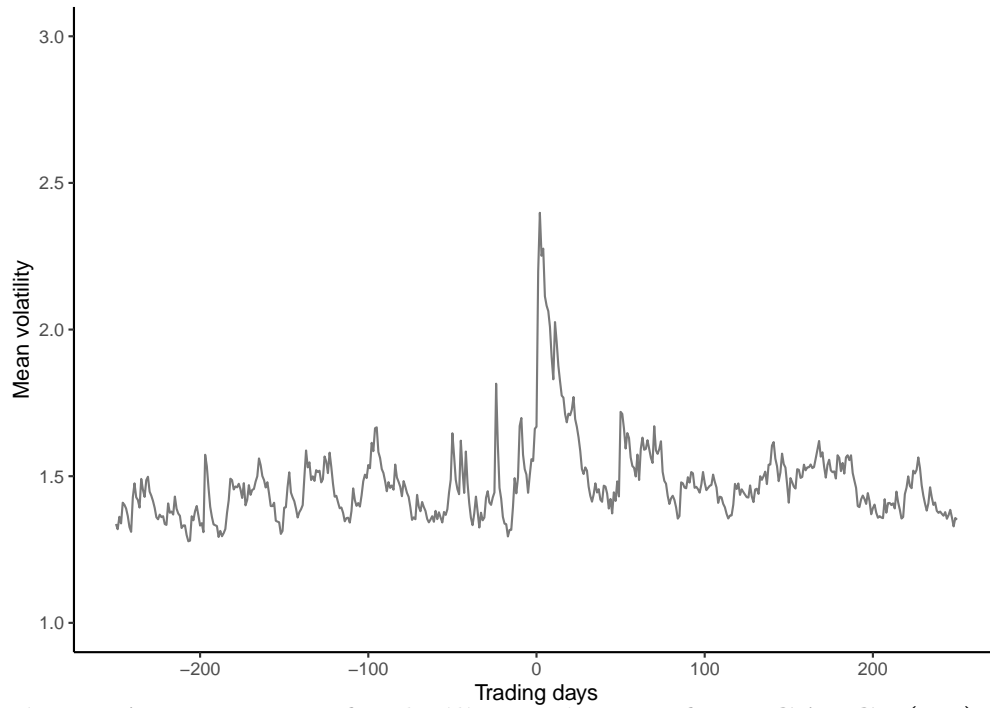
Figure A.13: Mean of volatility estimates from GARCH(1,1) models with adjustment for structural breaks

Abnormal returns for events with insignificant 7-day pre-trends only

Table A.3: Abnormal returns following coups

| Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
Argentina	06/08/1970	−1.919	−0.530	−2.011	0.247	4.728	204
		(0.949)	(2.510)	(4.243)	(2.510)	(4.243)	
Argentina	03/22/1971	0.925	14.294	24.218	0.131	0.274	
		(1.216)	(3.218)	(5.439)	(3.218)	(5.439)	
Bangladesh	01/11/2007	−0.320	10.351	14.883	−0.896	2.250	2
		(1.166)	(3.086)	(5.217)	(3.086)	(5.217)	
Egypt	07/03/2013	−0.346	5.169	7.144	6.776	−4.869	2
		(1.515)	(4.009)	(6.776)	(4.009)	(6.776)	
Nepal	10/04/2002	0.090	1.563	5.567	−1.014	−0.493	2
		(1.206)	(3.190)	(5.392)	(3.190)	(5.392)	
Pakistan	10/14/1999	−7.737	−9.431	−7.130	4.151	4.900	36
		(1.943)	(5.141)	(8.690)	(5.141)	(8.690)	
Peru	04/06/1992	−6.819	−5.814	−25.027	−2.075	−10.519	5
		(2.210)	(5.848)	(9.885)	(5.848)	(9.885)	
South Korea	12/12/1979	−1.784	−3.474	−24.465	−1.678	−6.187	418
		(1.152)	(3.047)	(5.150)	(3.047)	(5.150)	
Thailand	10/06/1976	−0.541	0.837	0.731	0.001	0.713	3
		(0.639)	(1.691)	(2.859)	(1.691)	(2.859)	
Thailand	02/25/1991	−7.326	2.860	14.162	6.326	26.262	7
		(2.884)	(7.631)	(12.899)	(7.631)	(12.899)	
Thailand	09/19/2006	−0.481	−2.640	0.111	1.848	0.131	17
		(1.094)	(2.894)	(4.892)	(2.894)	(4.892)	
Thailand	05/23/2014	−0.571	2.800	4.591	2.350	−0.424	5
		(1.201)	(3.177)	(5.370)	(3.177)	(5.370)	
Mean		−2.236	1.332	1.064	1.347	1.397	63
		(0.448)	(1.184)	(2.001)	(1.184)	(2.001)	

Notes: Standard errors are in parentheses. "Days to rebound" is the number of trading days following a negative stock return for the national stock index to return to pre-event level (it is calculated if the price decreases on the event day, not if the event day abnormal return is negative). Returns are inflation adjusted.

Table A.4: Abnormal returns following assassinations

Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
Israel	11/05/1995	−3.460	−3.177	0.743	−0.857	−10.316	12
		(1.473)	(3.897)	(6.587)	(3.897)	(6.587)	
Nepal	06/12/2001	−0.513	2.965	15.516	5.956	1.791	20
		(3.513)	(9.295)	(15.711)	(9.295)	(15.711)	
South Korea	10/26/1979	−0.364	−9.376	1.186	0.690	−0.368	14
		(1.058)	(2.800)	(4.734)	(2.800)	(4.734)	
Sri Lanka	05/03/1993	−3.231	−0.983	3.515	−0.541	−1.360	7
		(0.767)	(2.030)	(3.432)	(2.030)	(3.432)	
Sweden	03/03/1986	0.698	5.038	10.908	−3.754	0.955	
		(0.927)	(2.452)	(4.145)	(2.452)	(4.145)	
United States	09/07/1901	−4.522	−3.055	−8.920	−0.733	3.456	963
		(1.283)	(3.394)	(5.738)	(3.394)	(5.738)	
Mean		−1.899	−1.431	3.825	0.127	−0.974	203
		(0.721)	(1.908)	(3.225)	(1.908)	(3.225)	

Notes: Standard errors are in parentheses. "Days to rebound" is the number of trading days following a negative stock return for the national stock index to return to pre-event level (it is calculated if the price decreases on the event day, not if the event day abnormal return is negative). Returns are inflation adjusted.

Table A.5: Abnormal returns following resignations

Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
Bangladesh	12/07/1990	0.323	1.002	2.171	1.880	3.654	
		(0.871)	(2.305)	(3.896)	(2.305)	(3.896)	
Ecuador	04/20/2005	−0.084	−0.249	−0.595	−1.305	0.710	
		(0.945)	(2.499)	(4.225)	(2.499)	(4.225)	
Indonesia	05/20/1998	2.817	4.296	4.543	−2.695	−17.868	
		(3.392)	(8.974)	(15.168)	(8.974)	(15.168)	
Lithuania	04/06/2004	−0.575	−3.319	−11.704	2.182	5.426	159
		(1.137)	(3.007)	(5.083)	(3.007)	(5.083)	
Nepal	04/25/2006	1.915	8.132	9.937	−1.951	−4.205	
		(0.665)	(1.760)	(2.975)	(1.760)	(2.975)	
Pakistan	04/19/1993	−3.265	−0.432	2.771	−0.312	−0.485	15
		(1.108)	(2.930)	(4.953)	(2.930)	(4.953)	
Pakistan	11/06/1996	5.084	1.229	−0.441	4.182	7.597	
		(1.416)	(3.746)	(6.331)	(3.746)	(6.331)	
Philippines	02/26/1986	12.938	21.473	23.086	−1.847	−6.884	
		(0.477)	(1.263)	(2.134)	(1.263)	(2.134)	
Philippines	01/19/2001	1.150	16.837	18.469	−5.382	3.581	
		(1.591)	(4.209)	(7.115)	(4.209)	(7.115)	
Thailand	05/25/1992	3.248	−6.574	3.789	−5.085	−10.841	
		(1.433)	(3.793)	(6.411)	(3.793)	(6.411)	
Turkey	06/30/1997	2.010	−2.861	−7.629	12.876	4.532	
		(3.015)	(7.976)	(13.481)	(7.976)	(13.481)	
Ukraine	12/28/2004	5.118	12.837	18.445	4.170	32.085	
		(2.797)	(7.401)	(12.511)	(7.401)	(12.511)	
Mean		2.557	4.364	5.237	0.560	1.442	87
		(0.526)	(1.392)	(2.353)	(1.392)	(2.353)	

Notes: Standard errors are in parentheses. "Days to rebound" is the number of trading days following a negative stock return for the national stock index to return to pre-event level (it is calculated if the price decreases on the event day, not if the event day abnormal return is negative). Returns are inflation adjusted.

Abnormal returns for failed coups

Table A.6: Abnormal returns following failed coups

Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	rebound
Argentina	10/11/1971	1.338	−0.856	2.940	−3.264	−14.747	
		(1.680)	(4.446)	(7.515)	(4.446)	(7.515)	
Argentina	12/19/1975	0.924	1.402	14.276	5.685	−3.607	
		(4.145)	(10.966)	(18.535)	(10.966)	(18.535)	
Bangladesh	05/20/1996	1.128	0.497	8.563	6.460	11.479	
		(0.853)	(2.258)	(3.816)	(2.258)	(3.816)	
Ecuador	01/21/2000	0.341	2.309	6.146	2.272	3.899	
		(2.313)	(6.119)	(10.344)	(6.119)	(10.344)	
Paraguay	04/22/1996	−0.203	−2.700	−3.674	0.454	18.218	42
		(0.624)	(1.652)	(2.792)	(1.652)	(2.792)	
Paraguay	05/19/2000	0.066	1.022	2.482	0.464	0.870	
		(0.626)	(1.656)	(2.799)	(1.656)	(2.799)	
Peru	11/13/1992	−0.120	14.284	24.952	−1.281	11.293	3
		(2.752)	(7.281)	(12.307)	(7.281)	(12.307)	
Peru	10/30/2000	0.213	0.044	−0.496	0.239	−4.339	
		(1.097)	(2.903)	(4.906)	(2.903)	(4.906)	
Philippines	07/07/1986	−3.470	11.894	0.034	10.826	17.907	2
		(1.587)	(4.198)	(7.095)	(4.198)	(7.095)	
Philippines	01/27/1987	5.634	10.651	0.545	−7.358	−1.492	
		(2.214)	(5.858)	(9.902)	(5.858)	(9.902)	
Philippines	04/18/1987	−0.174	1.540	−0.724	1.924	7.054	
		(2.501)	(6.617)	(11.184)	(6.617)	(11.184)	
Philippines	08/27/1987	4.179	−21.536	−44.069	−14.846	−12.858	
		(2.739)	(7.245)	(12.247)	(7.245)	(12.247)	
Philippines	12/11/1989	−11.089	−31.340	−21.375	−5.954	−1.390	526
		(1.531)	(4.049)	(6.845)	(4.049)	(6.845)	
Philippines	10/04/1990	−5.978	0.614	14.891	−10.494	−25.502	3
		(2.010)	(5.319)	(8.991)	(5.319)	(8.991)	
Philippines	07/28/2003	−2.169	−5.807	−2.766	0.775	2.860	31
		(1.129)	(2.986)	(5.048)	(2.986)	(5.048)	
Philippines	11/29/2007	1.100	2.605	−1.040	−3.489	−8.759	
		(1.795)	(4.750)	(8.029)	(4.750)	(8.029)	
Spain	02/24/1981	−0.221	−2.653	−0.572	1.537	8.807	2
		(0.562)	(1.488)	(2.515)	(1.488)	(2.515)	
Thailand	03/28/1977	0.575	5.012	12.596	2.515	0.478	
		(0.487)	(1.287)	(2.176)	(1.287)	(2.176)	
Thailand	04/01/1981	−1.395	−1.039	−2.102	−0.346	−0.928	5
		(0.706)	(1.868)	(3.157)	(1.868)	(3.157)	
Thailand	09/09/1985	−0.674	−1.651	−3.922	−0.628	−5.200	242
		(0.515)	(1.361)	(2.301)	(1.361)	(2.301)	
Turkey	07/18/2016	−7.326	−11.535	−4.985	6.216	8.195	130
		(1.368)	(3.619)	(6.117)	(3.619)	(6.117)	
Venezuela	02/04/1992	0.000	−9.832	−9.717	5.852	16.198	
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
Venezuela	11/27/1992	0.367	−0.438	2.725	4.543	−1.219	
		(2.422)	(6.408)	(10.831)	(6.408)	(10.831)	
Venezuela	04/12/2002	10.032	−0.808	0.948	−0.089	−0.081	
		(1.397)	(3.696)	(6.248)	(3.696)	(6.248)	
Mean		−0.288	−1.597	−0.181	0.084	1.131	98
		(0.370)	(0.978)	(1.653)	(0.978)	(1.653)	

Table A.7: Abnormal returns following failed and successful coups

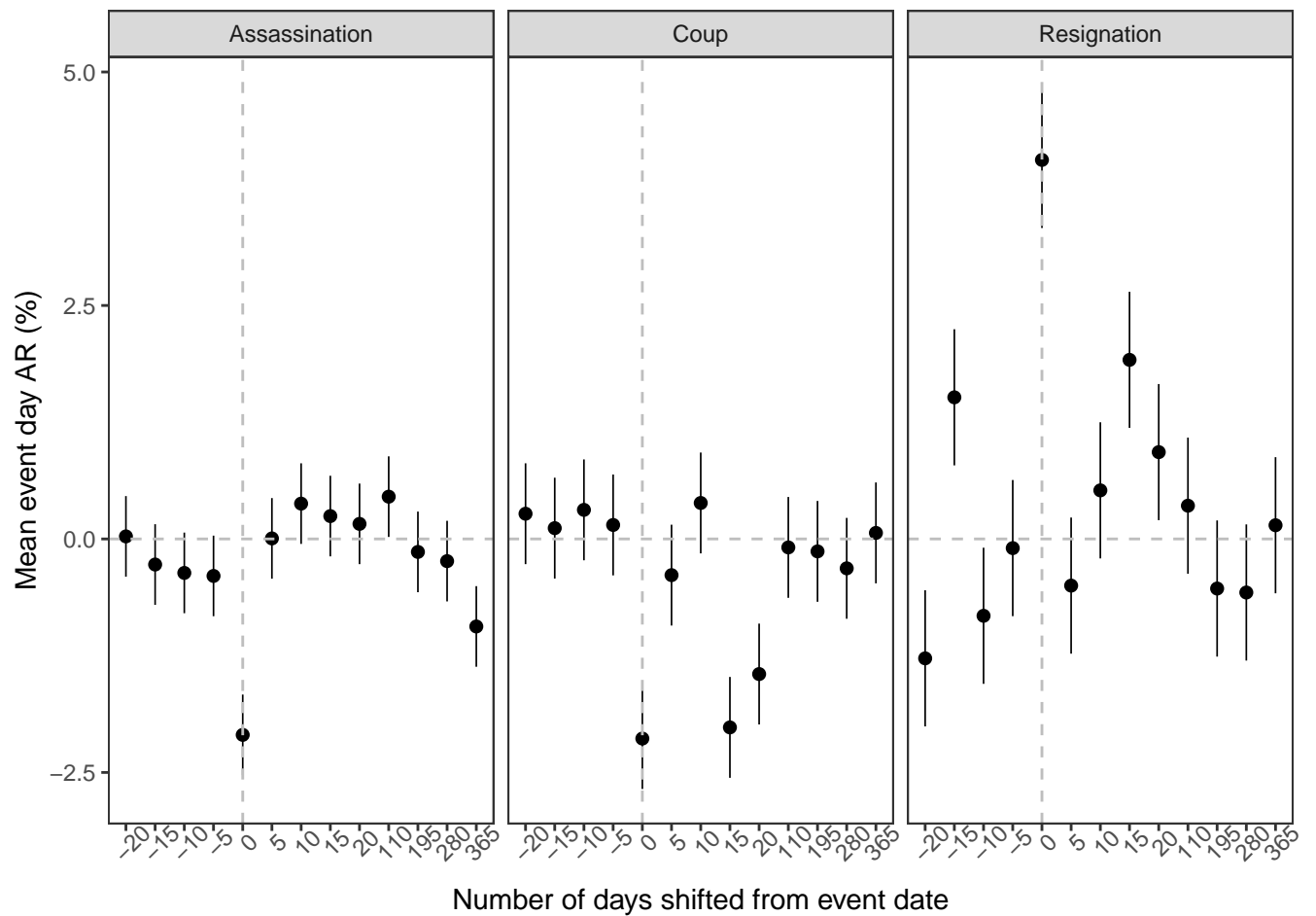| Country	Event Date	Post-Event CAR			Pre-Event CAR		Days to rebound
		(0,0)	(0,6)	(0,19)	(-1,-7)	(-1,-20)	
Argentina	10/11/1971	1.338	−0.856	2.940	−3.264	−14.747	
		(1.680)	(4.446)	(7.515)	(4.446)	(7.515)	
Argentina	12/19/1975	0.924	1.402	14.276	5.685	−3.607	
		(4.145)	(10.966)	(18.535)	(10.966)	(18.535)	
Bangladesh	05/20/1996	1.128	0.497	8.563	6.460	11.479	
		(0.853)	(2.258)	(3.816)	(2.258)	(3.816)	
Ecuador	01/21/2000	0.341	2.309	6.146	2.272	3.899	
		(2.313)	(6.119)	(10.344)	(6.119)	(10.344)	
Paraguay	04/22/1996	−0.203	−2.700	−3.674	0.454	18.218	42
		(0.624)	(1.652)	(2.792)	(1.652)	(2.792)	
Paraguay	05/19/2000	0.066	1.022	2.482	0.464	0.870	
		(0.626)	(1.656)	(2.799)	(1.656)	(2.799)	
Peru	11/13/1992	−0.120	14.284	24.952	−1.281	11.293	3
		(2.752)	(7.281)	(12.307)	(7.281)	(12.307)	
Peru	10/30/2000	0.213	0.044	−0.496	0.239	−4.339	
		(1.097)	(2.903)	(4.906)	(2.903)	(4.906)	
Philippines	07/07/1986	−3.470	11.894	0.034	10.826	17.907	2
		(1.587)	(4.198)	(7.095)	(4.198)	(7.095)	
Philippines	01/27/1987	5.634	10.651	0.545	−7.358	−1.492	
		(2.214)	(5.858)	(9.902)	(5.858)	(9.902)	
Philippines	04/18/1987	−0.174	1.540	−0.724	1.924	7.054	
		(2.501)	(6.617)	(11.184)	(6.617)	(11.184)	
Philippines	08/27/1987	4.179	−21.536	−44.069	−14.846	−12.858	
		(2.739)	(7.245)	(12.247)	(7.245)	(12.247)	
Philippines	12/11/1989	−11.089	−31.340	−21.375	−5.954	−1.390	526
		(1.531)	(4.049)	(6.845)	(4.049)	(6.845)	
Philippines	10/04/1990	−5.978	0.614	14.891	−10.494	−25.502	3
		(2.010)	(5.319)	(8.991)	(5.319)	(8.991)	
Philippines	07/28/2003	−2.169	−5.807	−2.766	0.775	2.860	31
		(1.129)	(2.986)	(5.048)	(2.986)	(5.048)	
Philippines	11/29/2007	1.100	2.605	−1.040	−3.489	−8.759	
		(1.795)	(4.750)	(8.029)	(4.750)	(8.029)	
Spain	02/24/1981	−0.221	−2.653	−0.572	1.537	8.807	2
		(0.562)	(1.488)	(2.515)	(1.488)	(2.515)	
Thailand	03/28/1977	0.575	5.012	12.596	2.515	0.478	
		(0.487)	(1.287)	(2.176)	(1.287)	(2.176)	
Thailand	04/01/1981	−1.395	−1.039	−2.102	−0.346	−0.928	5
		(0.706)	(1.868)	(3.157)	(1.868)	(3.157)	
Thailand	09/09/1985	−0.674	−1.651	−3.922	−0.628	−5.200	242
		(0.515)	(1.361)	(2.301)	(1.361)	(2.301)	
Turkey	07/18/2016	−7.326	−11.535	−4.985	6.216	8.195	130
		(1.368)	(3.619)	(6.117)	(3.619)	(6.117)	
Venezuela	02/04/1992	0.000	−9.832	−9.717	5.852	16.198	
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
Venezuela	11/27/1992	0.367	−0.438	2.725	4.543	−1.219	
		(2.422)	(6.408)	(10.831)	(6.408)	(10.831)	
Venezuela	04/12/2002	10.032	−0.808	0.948	−0.089	−0.081	
		(1.397)	(3.696)	(6.248)	(3.696)	(6.248)	
Argentina	06/08/1970	−1.919	−0.530	−2.011	0.247	4.728	204
		(0.949)	(2.510)	(4.243)	(2.510)	(4.243)	
Argentina	03/22/1971	0.925	14.294	24.218	0.131	0.274	
		(1.216)	(3.218)	(5.439)	(3.218)	(5.439)	
Thailand	10/06/1976	−0.541	0.837	0.731	0.001	0.713	3
		(0.639)	(1.691)	(2.859)	(1.691)	(2.859)	
Thailand	10/20/1977	−0.951	4.096	7.290	9.961	10.198	2
		(1.232)	(3.260)	(5.510)	(3.260)	(5.510)	
South Korea	12/12/1979	−1.784	−3.474	−24.465	−1.678	−6.187	418
		(1.152)	(3.047)	(5.150)	(3.047)	(5.150)	
Thailand	02/25/1991	−7.326	2.860	14.162	6.326	26.262	7
		(2.884)	(7.631)	(12.899)	(7.631)	(12.899)	
Peru	04/06/1992	−6.819	−5.814	−25.027	−2.075	−10.519	5
		(2.210)	(5.848)	(9.885)	(5.848)	(9.885)	
Pakistan	10/14/1999	−7.737	−9.431	−7.130	4.151	4.900	36
		(1.943)	(5.141)	(8.690)	(5.141)	(8.690)	
Nepal	10/04/2002	0.090	1.563	5.567	−1.014	−0.493	2
		(1.206)	(3.190)	(5.392)	(3.190)	(5.392)	
Thailand	09/19/2006	−0.481	−2.640	0.111	1.848	0.131	17
		(1.094)	(2.894)	(4.892)	(2.894)	(4.892)	
Bangladesh	01/11/2007	−0.320	10.351	14.883	−0.896	2.250	2
		(1.166)	(3.086)	(5.217)	(3.086)	(5.217)	
Egypt	07/03/2013	−0.346	5.169	7.144	6.776	−4.869	2
		(1.515)	(4.009)	(6.776)	(4.009)	(6.776)	
Thailand	05/23/2014	−0.571	2.800	4.591	2.350	−0.424	5
		(1.201)	(3.177)	(5.370)	(3.177)	(5.370)	
Mean		−0.938	−0.493	0.425	0.761	1.462	76
		(0.282)	(0.747)	(1.262)	(0.747)	(1.262)	

Time-shifted placebo test

Figure A.14: Time-shifted placebo sensitivity analysis of mean event day abnormal return by type of regime change
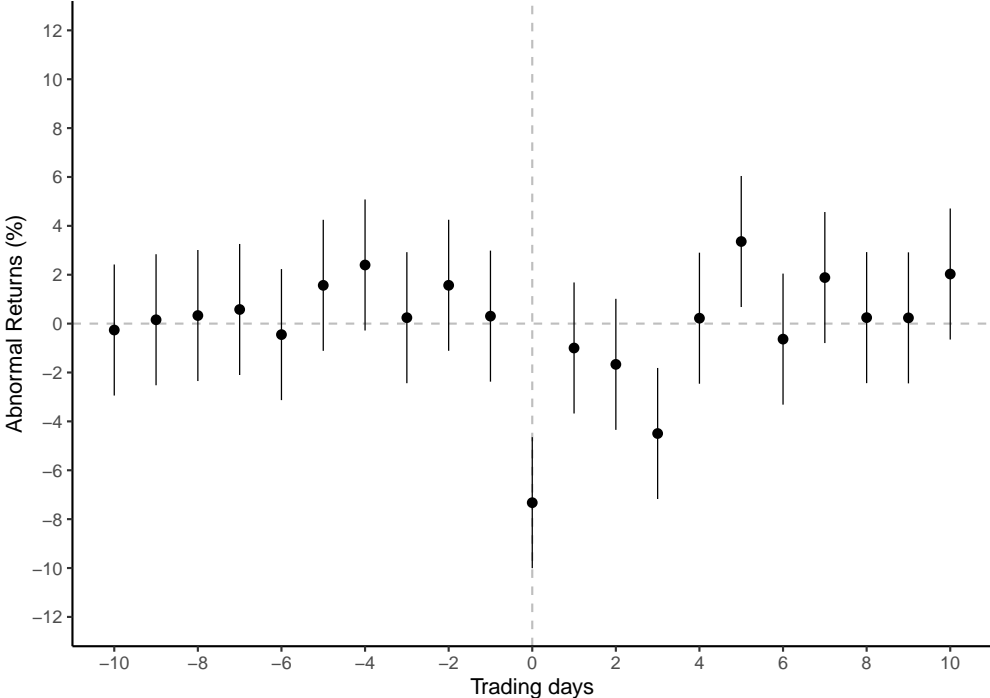
Graphical depictions of additional events

Figure A.15: Abnormal returns surrounding the 2016 Turkish coup attempt

Synthetic Control Portfolio

Let $\boldsymbol{R}_k$ be the vector of returns for the event country in the estimation window, $\boldsymbol{R}_{-k}$ be the vector of returns for all other countries in the estimation window, $\boldsymbol{X}_1 = (\boldsymbol{R}_k, \mathrm{Var}(\boldsymbol{R}_k))$, $\boldsymbol{X}_0 = (\boldsymbol{R}_{-k}, \mathrm{Var}(\boldsymbol{R}_{-k}))$, and $\boldsymbol{W}_{-k}$ be a $((N-1) \times 1)$ vector of weights where N is the number of countries listed in Table 1. Then $\boldsymbol{W}^*$ is chosen to minimize $(\boldsymbol{X}_1 - \boldsymbol{X}_0 \boldsymbol{W})' \boldsymbol{V} (\boldsymbol{X}_1 - \boldsymbol{X}_0 \boldsymbol{W})$ subject to $w_i \geq 0$ $(i = 1, 2, \ldots, N-1)$ and $\sum_i^{N-1} w_i = 1$, and the vector $\boldsymbol{V}$ is chosen so that stock returns for the control portfolio during the estimation window are are close as possible to the event country.[31]

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[31]See Abadie and Gardeazabal (2003) for further details.