

# COUPS, CORPORATIONS, AND CLASSIFIED INFORMATION\*

ARINDRAJIT DUBE  
ETHAN KAPLAN  
SURESH NAIDU

We estimate the impact of coups and top-secret coup authorizations on asset prices of partially nationalized multinational companies that stood to benefit from U.S.-backed coups. Stock returns of highly exposed firms reacted to coup authorizations classified as top-secret. The average cumulative abnormal return to a coup authorization was 9% over 4 days for a fully nationalized company, rising to more than 13% over 16 days. Precoup authorizations accounted for a larger share of stock price increases than the actual coup events themselves. There is no effect in the case of the widely publicized, poorly executed Cuban operations, consistent with abnormal returns to coup authorizations reflecting credible private information. We also introduce two new intuitive and easy to implement nonparametric tests that do not rely on asymptotic justifications. *JEL* Codes: F50, G14.

## I. INTRODUCTION

Covert operations conducted by intelligence agencies were a key component of superpower foreign policy during the Cold War. For the United States, many of these operations had the expressed goal of replacing “unfriendly” regimes—often ones that had expropriated multinational corporate property—and were planned under extreme secrecy. Since corporate property was always restored after a successful regime change, these operations were potentially profitable to nationalized companies. If foreknowledge of these operations was truly secret, then precoup asset prices should not have reflected the expected future gains. However, this article shows that not only were U.S.-supported coups valuable to

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partially nationalized multinationals, but in addition, asset traders arbitrated supposedly “top-secret” information concerning plans to overthrow foreign governments.

Specifically, we estimate the effect of secret U.S., as well as allied government decisions to overthrow foreign governments on the stock prices of companies that stood to benefit from regime change. We consider companies that had a large fraction of their assets expropriated by a government that was subsequently a target of a U.S.-sponsored covert operation aimed at overthrowing the regime. Using timelines reconstructed from official CIA documents, we find statistically and economically significant effects on stock prices both from the regime change itself and from “top-secret” authorizations. Total stock price gains from coup authorizations were three times larger in magnitude than price changes from the coups themselves. We thus show that there were substantial economic incentives for firms to lobby for these operations. Although we are unable to discern precisely who was trading, or whether these economic incentives were decisive for U.S. policy makers (versus political ideology or geopolitics), we *do* show that regime changes led to significant economic gains for corporations that stood to benefit from U.S. interventions in developing countries.

Our findings complement other evidence in empirical political economy that large, politically connected firms benefit from favorable political regimes (Fisman 2001; Faccio 2006; Knight 2006; Snowberg, Wolfers, and Zeitzwitz 2007). However, we show that firms benefit not only from publicly announced events but also from top-secret events, suggesting information flows from covert operations into markets. Our results are consistent with recent papers that have used asset price data to show that companies can profit from conflict (Guidolin and La Ferrara 2007; DellaVigna and La Ferrara 2010). We also provide evidence that private information generally leaks into asset prices slowly over time. This is consistent with both private information theories of asset price determination (Allen, Morris, and Shin 2006) and the empirical literature on insider trading (Meulbroek 1992). We differentiate our work from the prior work on insider trading in so far as the private information being traded on concerns government policy, and not company decisions or other information generated within the company.

The theoretical literature on coups in economics has emphasized the role of domestic elites (Acemoglu and Robinson 2006).

However, antidemocratic political transitions have often been instigated, planned, and even partially executed from abroad, most notably by the United States and the former Soviet Union during the Cold War. Operating under the threat of nuclear war, direct conflict between the two superpowers was replaced by covert and proxy operations to install supporting regimes (Chomsky 1986; Kinzer 2006). According to Easterly et al. (2010), 24 country leaders were installed by the CIA and 16 by the KGB since the end of World War II.

Our article also makes a methodological contribution to hypothesis testing in event studies. The structure of our event study allows us to improve on existing nonparametric tests. Nonparametric tests used in event studies do not use exact small sample distributions but tests with faster asymptotic convergence to a normal distribution (Corrado and Zivney 1992; Campbell, Lo, and Mackinlay 1997). We introduce two new small sample tests motivated by Fisher's exact test that are valid without asymptotic justifications.

Section II discusses the history of U.S. covert interventions, with background on each of the coups in our sample. Section III describes the data and our selection of companies and events. Section IV outlines our estimation strategies and Section V reports our main results along with a number of robustness checks and small sample tests. Section VI provides an interpretation of our main results; we decompose coup gains to a multinational into public and private information components. We conclude in Section VII.

## II. BACKGROUND AND HISTORY

The Central Intelligence Agency was created in 1947 under the National Security Act. The act allowed for "functions and duties related to intelligence affecting the national security," in addition to intelligence gathering (Weiner 2007). Initially, the scope of the CIA was relegated to intelligence, though a substantial and vocal group advocated for a more active role for the agency. This culminated in National Security Council Directive No. 4, which ordered the CIA to undertake covert actions against communism. In the United States, covert operations designed to overthrow foreign governments were usually first approved by the director of the CIA and then subsequently by the president of the United States (Weiner 2007).

After Eisenhower's election in 1952, Allen Dulles was appointed director of the agency. Under Dulles, the CIA expanded its role to include planning and executing overthrows of foreign governments using military force. All but eight of the CIA operations listed in Table I, including four of the five studied in this article began during Dulles's reign as CIA director under the Eisenhower administration. Allen Dulles was supported by his brother, John Foster Dulles, who was the contemporaneous Secretary of State. The Dulles brothers together wielded substantial influence over American foreign policy from 1952 to 1960.

In 1974, partly due to public outcry over the U.S. involvement in the military coup in Chile, the Hughes-Ryan Act increased congressional oversight of CIA covert operations. In 1975, the U.S. legislature formed subcommittees to investigate American covert

TABLE I  
COUP SELECTION

Project	Country	Year	Planning Docs		Description	Coups	
			Declassified			Exprop.	
Ajax	Iran	1953	Yes		Coup against Mossadeq	Yes	Yes
FU/Belt	Chile	1970-73	Yes		Coup against Allende	Yes	Yes
Bloodstone	Germany	1946	No		Recruitment of Nazis	No	No
Brushfire	US	1955	Yes		Propaganda at Universities	No	No
Camelot	Chile	1960s	No		Funded Anthro. Research	No	NA
ST/Circus	Tibet	1955	No		Trained Tibetan Rebels	Yes	No
Democracy	Nicaragua	1985	No		Anti-Sandinista Operations	No	Yes
IA/Feature	Angola	1975	No		Supported Savimbi	No	Yes
Fiend	Albania	1949	No		Insurgency	Yes	No
PM/Forget	All over	1950s	No		Pro-U.S. Media Distortion	No	NA
Haik	Indonesia	1956/57	No		Military Support for Rebels	Yes	Yes
HardNose	Vietnam	1965	No		Disrupt Viet Cong Supplies	No	No
Momentum	Laos	1959	No		Trained Hmong in Laos	No	No
Mongoose	Cuba	1961	Yes		Post-Bay of Pigs Operations	No	Yes
Opera	France	1951	No		Electoral Manipulations	No	No
Paper	China	1951	No		Invasion from Burma	No	No
PB/Fortune, PB/Success	Guatemala	1952-54	Yes		Coup Against Arbenz	Yes	Yes
Stole	N. Korea	1950/51	No		Sabotage	No	No
Tiger	Syria	1956	Yes		Assassination Attempts	No	No
Washtub	Guatemala	1954	Yes		Anti-Arbenz Propaganda	No	Yes
Wizard	Congo	1960	Yes		Lumumba Assassination	Yes	Yes
Zapata	Cuba	1960-61	Yes		Bay of Pigs	Yes	Yes

*Notes.* Project is the name of the operation. Country is the target country of the operation. Year is the year when the operation was carried out. Planning documents records yes if the planning documents are publicly available. Description is a description of the operation. Coup is recorded as yes if a coup was planned as part of the operation and no otherwise, and Exprop. refers to whether the regime nationalized (or expropriated) property from multinational firms operating within the country.

action. Afterward, the intensity and scope of U.S. covert actions fell substantially (Johnson 1989). The height of covert CIA activity lasted slightly more than 20 years, encompassing the period between 1952 and 1974.

Our sample of coups includes five such covert attempts. The first one occurred in Iran in August 1953, when the CIA, jointly with the United Kingdom's MI6, engineered a toppling of Prime Minister Mossadegh. Mossadegh had nationalized the oil fields and refinery at Abadan, which were the property of the Anglo-Iranian Oil Company, itself a partially publicly owned company of the U.K. government. In Guatemala, the CIA overthrow of Jacobo Arbenz Guzman in June 1954 occurred after the Arbenz government had nationalized most of United Fruit's assets in Guatemala. Next, in 1960 and 1961, both the United States and Belgium engaged in independent operations to politically neutralize the government of Patrice Lumumba in the Congo. Lumumba had refused to allow Katanga, a copper-rich enclave controlled by the Belgian multinational Union Minière, to secede and avoid taxation and potential nationalization. In Cuba, the Castro government nationalized all U.S. property in 1960, one year before the failed Bay of Pigs coup attempt in April 1961. Finally, the Chilean nationalization of copper and other foreign-owned assets began under the Frei government, but proposed compensation was substantially lower and nationalizations more frequent after the Allende government came to power in late 1970. Allende was in office less than three years before he was killed during a coup on September 11, 1973. In Online Appendix A, we provide a more detailed synopsis of each coup, focusing on the nature of the precoup regime, the motivations behind the expropriations, the foreign responses, and the resolution of the coup.

The qualitative evidence on links between business and coup planners is substantial. First, much of the early CIA leadership was recruited from Wall Street. A 1945 report on the CIA's precursor by Colonel Richard Park claimed that the "hiring and promotion of senior officers rested not on merit but on an old boy network from Wall Street" (Weiner 2007). Second, there was direct contact between the companies that had been nationalized and the CIA. For example, at the time of the coup planning against Arbenz, three high-ranking members of the executive branch of government had strong connections with the United Fruit Company. Alan Dulles, a former member of the board of directors of the United Fruit Company, was director of the CIA. Thomas Dudley

Cabot held at different times the positions of director of International Security Affairs in the State Department and CEO of the United Fruit Company. His younger brother, John Moore Cabot, was secretary of Inter-American Affairs during much of the coup planning in 1953 and 1954. Besides the fact that Anglo-Iranian was a majority state-owned company, the company met with CIA agent (and later historian) Kermit Roosevelt, who alleged in his 1954 history that the initial plan for the coup was proposed by the Anglo-Iranian Oil Company. In Belgium, the royal court and the powerful bank Société Générale tied together a social and financial network of colonial officials and businesses. De Witte writes that “the incontrovertible political conclusion is that the political class, including the [Belgian] court, had a direct material interest in the outcome of the Congo crisis” (De Witte 2001). Most directly, the minister of African Affairs, a key instigator and planner of Operation Barracuda, Harold d’Aspremont-Lyden was the nephew of Gobert d’Aspremont-Lyden who was an administrator for Union Minière. The Senate Church Committee reported that the CIA held meetings with U.S. multinationals involved in Chile on a regular basis, even to the point of ITT (whose board included John McCone, a former director of the CIA) notoriously offering the CIA \$1 million to overthrow Allende’s government (Weiner 2007). In short, social links between the government officials responsible for the coups and financial interests are well documented. Secret plans for regime change could have easily made it into the ears of financial actors who, even if not directly connected to the affected companies, could arbitrage this information on the market.

Our results are consistent with the presence of both direct information leakage between political decision makers and the companies that stood to benefit, as well as indirect information flows to the market. We are unable to produce definitive evidence on the identity of the traders or pinpoint the exact source of the information leakage.

### III. DATA

We focused on the set of all CIA coups where (a) the CIA attempted to effect regime change, (b) the relevant planning documents have been declassified, and (c) the government had expropriated property from a publicly listed multinational. The details of how we obtained a comprehensive list of coups, declassified documents, and expropriations are described in Online

Appendix B. We are left with five coups where all three of our criteria are satisfied: Iran, Guatemala, Congo, Cuba, and Chile. Online Appendix A provides detailed historical background for each of these coups.

We first extract all of the coup authorization events from the timelines based on the declassified planning documents. These events are restricted to those where either a coup was explicitly approved by the head of a government or ministry (the president of the United States, prime minister of the United Kingdom, or the Ministry for African Affairs in Belgium), the head of an intelligence agency (the CIA or MI6), or where US\$1 million or more was allocated to the overthrow of a foreign government. In the case of Congo, we include the date of the assassination of Lumumba, which happened in secrecy and was not known publicly for close to one month. Authorization events are coded as “good”(+1) or “bad”(−1) depending on whether they increase or decrease the likelihood of a coup. Our selection and coding of authorization events is presented in Table II.

We also extract public events from the official timelines for use as controls in some specifications. Public events are restricted

TABLE II  
AUTHORIZATION EVENT SELECTION

Date	Country	Description	Good	Canceled
September 15, 1970	Chile	Nixon Authorizes Anti-Allende Plan (Incl.Poss.Coup)	Y	N
January 28, 1971	Chile	40 Committee Appropriates \$1.2 Million	Y	N
October 26, 1972	Chile	40 Committee Appropriates \$1.4 Million	Y	N
August 20, 1973	Chile	40 Committee Appropriates \$1 Million	Y	N
August 18, 1960	Congo	Eisenhower Endorses Lumumba's Elimination	Y	Y
September 12, 1960	Congo	Belgian Operation Barracuda Begins	Y	Y
October 11, 1960	Congo	Operation Barracuda Canceled	N	Y
December 5, 1960	Congo	CIA Stops Operation	N	Y
January 18, 1961	Congo	Lumumba Secretly Killed	Y	N
March 17, 1960	Cuba	Eisenhower Approves Plan to Overthrow Castro	Y	N
August 18, 1960	Cuba	Eisenhower Approves \$13 Million to Overthrow Castro	Y	N
January 30, 1961	Cuba	Kennedy Authorizes Continuing Bay of Pigs Op	Y	N
November 4, 1961	Cuba	Operation Mongoose Planning Authorized	Y	Y
February 26, 1962	Cuba	Operation Mongoose Scaled Back	N	Y
October 30, 1962	Cuba	Operation Mongoose Cancelled	N	Y
August 18, 1952	Guatemala	DCIA Approves PBFortune (Coup to Overthrow Arbenz)	Y	Y
October 8, 1952	Guatemala	PBFortune Halted	N	Y
December 9, 1953	Guatemala	DCIA Approves PBSuccess (Coup to Overthrow Arbenz)	Y	N
April 19, 1954	Guatemala	Full Approval Given to PBSuccess	Y	N
June 19, 1953	Iran	CIA/MI6 Both Approve Coup	Y	N
July 1, 1953	Iran	Churchill Approves Coup	Y	N
July 11, 1953	Iran	Eisenhower Approves Coup	Y	N

Notes. Date is the date of the event. Country is the target country of the coup attempt. Description gives a brief description of the event. Good is coded as Y if the event should raise the share value of the company and N if the event should lower the share value of the company. Canceled is coded as Y if the operation was cancelled and N if it was executed; the 40 Committee was the subgroup of the executive branch National Security Council responsible for authorizing covert actions after 1964.

to dates where company assets are nationalized or regime transitions and consolidations occur. The public events are coded as “good”(+1) or “bad”(−1), where “good” events are those that are likely to increase the stock price and “bad” events are ones that are likely to cause a decline in the stock price. The public events and their coding are listed in Online Appendix Table AI. Table VII lists the dates of the regime changes themselves.

In addition to the data on the events, we also construct a data set of daily stock returns for publicly traded companies that were expropriated by the regimes that were then overthrown by the CIA. Using a variety of sources, also documented in Online Appendix A, we obtain the lists of companies expropriated in each country. For each of these companies, we obtain the amounts expropriated from various sources; we obtain daily stock market data either from CRSP or from archival sources. We define the exposure of a company to be the value of the assets expropriated divided by the average market capitalization in the year prior to the nationalizing regime coming into power. We also use market-level daily Fama-French four factors: excess return of the NYSE, high minus low (book to price ratio), small minus big (market capitalization), and momentum. For years prior to 1962, we obtained the daily HML and SMB factor data series from Oliver Boguth, and we constructed the daily momentum factor ourselves. Post-1962 data on the factors come from Ken French’s website. Additionally, we used a Perl script to generate a daily count of the number of *New York Times* articles mentioning both the name of the country and the country’s leader. Summary statistics of the main variables are presented in Table III.

#### IV. METHODOLOGY

Our main hypothesis is that authorization events result in an increase in the stock price of the affected company over the days following the event. We consider cumulative abnormal returns after the authorization events. In contrast to public events, we expect stock price reactions to top-secret events to potentially diffuse slowly. Our benchmark specification estimates a 4-day return starting at the event date, though we consider alternative specifications ranging from 1 to 21 days. We employ two different estimation strategies: a regression using the augmented Fama-French four-factor model, and a new set of distribution-free small sample tests.



TABLE III  
SUMMARY STATISTICS

		Variable										Daily Avg. NYT Stories
Company	Country	N	4-Digit SIC	Market Cap	Exprop. Value	Exposure	Mean (Raw Return)	SD (Raw Return)	Volume			
Anconda Co	Chile	2224	3333	4.80E+08	3.20E+08	0.6666	0.0000	0.0234	24298.61		0.5494	
Bethlehem Steel Corp	Chile	2225	3312	9.79E+08	2.50E+07	0.0255	0.0002	0.0177	36475.6		0.5494	
Cerro Corp	Chile	2224	1031	1.53E+08	1.41E+07	0.0923	-0.0001	0.0231	11858.5		0.5494	
General Tire & Rubr Co	Chile	2225	3011	3.29E+08	1.20E+07	0.0365	-0.0002	0.0188	14514.7		0.5494	
International Tel & Teleg Corp	Chile	2223	3662	2.57E+09	1.07E+08	0.0417	0.0000	0.0183	61939.7		0.5501	
Kennecott Copper Corp	Chile	2225	3331	1.33E+09	2.17E+08	0.1633	0.0002	0.0194	31554.1		0.5494	
Union Miniere	Congo	1124	1021	1.85E+11	6.25E+10	0.3379	-0.0009	0.0268			0.8823	
American Sugar Refing Co	Cuba	2085	2061	5.84E+07	5.52E+07	0.9452	0.0007	0.0167	709.2		2.6749	
Canada Dry Corp	Cuba	2088	2090	4.90E+07	1.11E+06	0.0227	0.0003	0.0127	1949.1		2.6733	
Coca Cola Co	Cuba	2087	2090	6.05E+08	1.87E+07	0.0310	0.0005	0.0115	2301.3		2.6592	
Colgate Palmolive Co	Cuba	2087	2841	2.79E+08	9.88E+06	0.0354	0.0006	0.0167	3880.8		2.6740	
Continental Can Inc	Cuba	2089	3411	5.55E+08	6.07E+06	0.0109	-0.0001	0.0165	4590.7		2.6696	
Freeport Sulphur Co	Cuba	2089	1477	2.26E+08	6.02E+07	0.2658	0.0002	0.0171	2730.5		2.6725	
International Tel & Teleg Corp	Cuba	2087	3662	5.40E+08	8.90E+07	0.1649	0.0005	0.0206	11711.5		2.6714	
Lone Star Cement Corp	Cuba	2087	3272	2.52E+08	1.69E+07	0.0672	0.0001	0.0163	3543.9		2.6716	
Swift & Co	Cuba	2088	2011	2.44E+08	4.05E+06	0.0166	0.0000	0.0127	2607.2		2.6738	
United Fruit Co	Cuba	2088	2062	3.03E+08	5.88E+07	0.1941	-0.0002	0.0165	7255.9		2.6733	
Woolworth F W Co	Cuba	2088	5331	5.58E+08	6.26E+06	0.0112	0.0002	0.0106	3537.8		2.6655	
United Fruit Co	Guatemala	3469	120	5.31E+08	7.83E+07	0.1475	0.0001	0.0116	3412.3		0.2170	
Anglo-Iranian	Iran	2391	2910	7.46E+09	2.31E+09	0.3103	0.0006	0.0204			0.7525	

Notes: Summary statistics by country and company are shown over the event window. N gives the number of observations for the majority of listed variables for a given company in a given country; in some cases, particular variables are missing for a few days for a given company/country. Market Cap is the average price times the outstanding shares starting two years before the nationalizing regime comes to power and ending one year before the nationalizing regime comes to power. Expropriated Value is the dollar amount of the assets that were expropriated from the company by the coup country government. Exposure is the ratio of nationalized to total assets for the company/country. Raw returns and volume are at the daily level. Daily Average NYT Stories are daily counts of articles in the *New York Times* which mention both a country and the country's leader by name.

#### IV.A. Regression Method

For the regression method, we regress a company's stock price return on an indicator for authorization events interacted with the company's exposure. We also control for four Fama-French factors (excess return of the NYSE, SMB, HML, and momentum):

$$(1) \quad R_{ft} = \mathbf{X}_t \beta_f + \gamma_c E_{ft}(k) + \epsilon_{ft};$$

here  $R_{ft}$  is the one-day raw stock return for firm  $f$  between the closing price at date  $t - 1$  and the closing price at date  $t$ , and  $\mathbf{X}_t$  is the vector of factors.  $E_{ft}(k)$  is a variable that takes on the value of a company's exposure for a  $k$ -day period beginning with an authorization day, and 0 otherwise. The average daily abnormal return over the  $k$ -day period in country  $c$  is  $\gamma_c$ . The cumulative abnormal return is  $k\gamma_c$ .<sup>1</sup> We consider values of  $k$  ranging from 1 to 21. In our multiple country regressions, we report the mean of the country-specific coefficients  $\frac{\sum_c \gamma_c}{C}$ , where  $C$  is the total number of countries. Our sample is the time period starting exactly one year before the nationalizing regime comes to power until the day before the beginning of the coup. The standard error for the cumulative abnormal return is given by the maximum of robust standard errors, standard errors clustered on date, and standard errors clustered on company.

#### IV.B. Small Sample Tests

One problem with the regression method as well as traditional event studies is that the distribution of abnormal returns is often non-normal, and the number of events is often small. As a result, use of conventional standard errors may produce an incorrect test size. We provide two nonparametric small sample tests based on the sign and rank tests used in the literature. Unlike the conventional rank and sign tests, however, we use "exact" distributions that do not rely on asymptotic justifications.

The standard rank and sign tests are motivated by the observation that these test statistics converge much faster to a normal distribution than the mean. Others have noted that the sign test has an analogue to Fisher's exact test, which uses the binomial distribution to calculate a distribution-free test for significance,

1. Note that this is a standard approximation to  $(1 + \gamma_k)^k - 1$ .

which we also implement. We also note that the percentile, based upon the rank, has a uniform distribution. This permits an analogous distribution-free test for the average rank.

We begin by estimating a market model with the four factors in an “estimation window” that is prior to any coup-related events. Our estimation window is two calendar years in length and begins three years before the nationalizing regime comes to power. We estimate firm-specific cumulative abnormal returns (CARs) for four-day windows starting with authorization dates. We weight these CARs by relative company exposure within country and form country-portfolio specific CARs. The overall CAR takes a simple average of returns over country-portfolios.

We first generalize the sign test by considering the number of events that have a  $k$ -day CAR greater than a given percentile  $p$ , where  $p$  is computed using  $k$ -day CARs in the estimation sample from country  $c$ . When cumulative abnormal returns are independently distributed across countries and events, the one-sided probability of getting  $m_p$  or more abnormal returns above the  $p$ th is:

$$(2) \quad 1 - \sum_{i=m_p}^M \binom{M}{i} p^i (1-p)^{M-i},$$

where  $M$  is the total number of events. This is the  $p$ -value of the one-sided binomial sign test. Since the  $p$ th percentile return is estimated based on a finite estimation sample, and multiple events within the same country use the same estimated  $p$ th percentile cutoff, this will induce a cross-event correlation in the measured percentiles within countries. Therefore, besides calculating the  $p$ -value analytically using Equation 2, we also follow the literature on randomization inference (Andrews 2003; Conley and Taber 2011) and simulate our test statistic. First we draw  $T_c$  percentiles from a uniform distribution, where  $T_c$  is the size of country  $c$ 's estimation window. We then draw  $M_c$  additional returns, where  $M_c$  is the number of events, from a uniform distribution.<sup>2</sup> We then estimate the  $p$ th percentile return from the  $T_c$  draws. Next, we count the number of  $M_c$  draws above the  $p$ th percentile of the  $T_c$  draws. We do this for all five countries and then compute the average number of event returns above the  $p$ th

2. Both the binomial and the uniform tests can be shown to be independent of the distribution of the underlying returns for a wide class of continuous distribution functions.

percentile, and repeat this procedure 10,000 times to estimate the simulated counterpart to Equation 2.

Finally, parallel to the binomial test, we construct an analogue of the rank test (Corrado 1989; Campbell, Lo, and Mackinlay 1997) exploiting the independence of events in our country portfolio sample to obtain exact inference. We rank each of our events relative to the distribution of abnormal returns in the estimation window. We then convert the rank into a percentile. Noting that, for i.i.d. variables, percentile is uniformly distributed, we compute the CDF for the sum of the percentiles of  $M$  independently and uniformly distributed random variables over the interval  $[0, 1]$ .<sup>3</sup> Without loss of generality, we assume that the mean percentile  $m \geq 0.5$ . Given the symmetry of the cumulative distribution function, the one-sided  $p$ -value of getting a percentile rank greater than  $m$  is then:

$$(3) \quad 1 - \sum_{j=0}^M \left( \frac{(-1)^j (m-j)^M \mathbf{1}(m \geq j)}{j!(M-j)!} \right)$$

We derive test statistics using the analytical equation from Equation 3. However, similar to the binomial test, we also simulate the distribution of average ranks. We report the modified sign and rank test results by country as well for the successful coups and the full sample. Finally, for the purpose of comparison, we also report asymptotic standard errors using the standard deviations of returns in the estimation window (Campbell, Lo, and Mackinlay 1997).

## V. RESULTS

### V.A. Baseline Results

In Table IV, we report the cumulative abnormal returns for authorization events interacted with exposure over periods ranging from 1 to 16 days in length. We use  $(0, k-1)$  to denote the  $k$ -day period beginning with the day of the event. We find clear evidence that stock prices react positively to authorization events. Row 1 of Table IV shows that in the pooled sample of all companies, the average four-day stock price return for an authorization

3. This test was suggested, but not pursued, by Corrado (1989).

TABLE IV  
EFFECT OF SECRET COUP AUTHORIZATIONS ON STOCK RETURNS. MAIN EFFECTS: CUMULATIVE ABNORMAL RETURNS

	(0,0)	(0,3)	(0,6)	(0,9)	(0,12)	(0,15)
All Coups	0.0435 (0.0162)***	0.0938 (0.0270)***	0.0990 (0.0345)***	0.1055 (0.0390)***	0.1204 (0.0424)***	0.1342 (0.0522)**
Successful Coups	22157	22157	22157	22157	22157	22157
	0.0551	0.1208	0.1274	0.1309	0.1459	0.1640
	(0.0201)***	(0.0336)***	(0.0425)***	(0.0481)***	(0.0523)***	(0.0647)**
	8555	8555	8555	8555	8555	8555
Canceled Coups	0.0729	0.1341	0.1414	0.1359	0.1564	0.1971
	(0.0337)**	(0.0546)**	(0.0681)**	(0.0730)*	(0.0777)**	(0.1018)*
	15257	15257	15257	15257	15257	15257
Chile	-0.0095	0.0172	0.0003	0.0214	0.0183	0.0104
	(0.0066)	(0.0274)	(0.0373)	(0.0491)	(0.0510)	(0.0620)
	6091	6091	6091	6091	6091	6091
Congo	0.1697	0.2270	0.2014	0.2429	0.2283	0.2581
	(0.0707)**	(0.1196)*	(0.1335)	(0.1426)*	(0.1546)	(0.1719)
	421	421	421	421	421	421

TABLE IV  
(CONTINUED)

	(0,0)	(0,3)	(0,6)	(0,9)	(0,12)	(0,15)
Congo-Belgium events	0.2730	0.2632	0.3179	0.4260	0.3914	0.4622
	(0.0794)***	(0.1895)	(0.1972)	(0.2029)**	(0.2182)*	(0.2260)**
Cuba	421	421	421	421	421	421
	-0.0030	-0.0141	-0.0147	0.0039	0.0183	0.0147
	(0.0079)	(0.0125)	(0.0178)	(0.0202)	(0.0222)	(0.0263)
Guatemala	13602	13602	13602	13602	13602	13602
	0.0491	0.1650	0.2049	0.1365	0.2011	0.1859
	(0.0203)**	(0.0530)***	(0.0896)**	(0.1136)	(0.1274)	(0.1662)
Iran	1234	1234	1234	1234	1234	1234
	0.0144	0.0739	0.1030	0.1229	0.1359	0.2017
	(0.0110)	(0.0184)***	(0.0428)**	(0.0385)***	(0.0349)***	(0.0792)**
	809	809	809	809	809	809

Notes. For single country regressions, the reported coefficient is on an indicator for authorization events interacted with company exposure, multiplied by the length of the window. Multi-country regressions report the mean of the country coefficients. All regressions control for an interaction of a company dummy (or country-specific company dummy for multi-country regressions) with the four Fama-French factors. All dates where a company changed its name or changed its outstanding shares by more than 5% were dropped. One day price changes greater than 50% in magnitude were dropped. "Successful coups" excludes Cuba. "Canceled coups" only uses authorizations and deauthorizations of coups that were eventually canceled. Column numbers at the top in parentheses denote the number of days before and after the authorizations which are included as part of the dummy variable for the authorization (e.g., (0,3) refers to returns from the event date and three days after the event date). Standard errors reported in parentheses are the maximum of clustered by company, clustered by date, and robust. Statistical significance at 10%, 5%, and 1% levels is denoted by \*, \*\*, and \*\*\*, respectively.

event is 9.4% with a standard error of 2.7%. This implies that a hypothetical company that had all its assets expropriated could be expected, on average, to experience roughly a 9.4% increase in its stock price within the four days following the secret authorization of a CIA coup. The cumulative abnormal returns are generally significant at the 1% level for the all-country sample from 4 through 13 days after the event. The abnormal returns continue to increase between days 4 and 16 after the event, consistent with the hypothesis that private information is incorporated into asset prices with a delay.

In row 2, we restrict attention to the set of four successful coups (i.e., excluding Cuba), and the corresponding estimates are consistently larger by around 25%–30%. The sample size drops substantially due to the large number of expropriated firms in Cuba. In row 3, we restrict attention to the events that were authorizations (and deauthorizations) of coups that were later canceled. The mean effect increases somewhat in magnitude (13.4% after 4 days), reaching a maximum of 19.7% at 10% significance after 16 days. We interpret the results on the canceled coups to provide additional evidence that the stock price reactions reflected changes in beliefs due to the authorizations themselves, and not the expected coup or trends leading up to the coup.<sup>4</sup>

Rows 4–9 show the results separately for each country. For Chile, the effect is positive by the fourth day after the authorization event, but small and insignificant. It also stays small through the longer horizons considered. In row 5, we consider Congo, which exhibits a large 16.7% effect on the day of an authorization event. The cumulative abnormal return increases to 22.7% after 4 days and then stabilizes, becoming statistically insignificant after 10 days. In row 6, we restrict attention to the events in the Congo sample that were decisions made by Belgian officials, as the affected company was Belgian and the operation was independent of the United States. Effects in this sample are even larger, with an immediate 27.3% effect after the event, rising to a 5% significant 46.2% after 16 days.

Row 7 shows the results for Cuba. There are two operations and thus two sets of events in Cuba. The first is the failed Bay

4. Although not reported in the table, if we further restrict attention to the deauthorization events themselves, the stock price of a fully exposed company falls by 11.7% within four days of a deauthorization, which further confirms this interpretation.

of Pigs invasion. The second is Operation Mongoose, which was started after the Bay of Pigs but was ultimately canceled. More details about the Cuban operations are available in Online Appendix A. There is virtually no effect in the Cuba subsample even after 16 days and, though not reported in the tables, for both operations considered individually. The qualitative evidence suggests two possible reasons for the absence of an effect in Cuba: (1) Due to the high degree of public aggression from the United States toward Cuba, including numerous bombing missions, the coup was already commonly believed to be in planning and thus information about top-secret authorizations were not considered “news” by financial market actors.<sup>5</sup> (2) Traders were pessimistic about success, partially owing to a combination of incompetence and lack of political commitment toward the coup by the Kennedy administration. Though we are not able to convincingly reject either explanation, we do provide additional evidence later that some traders did believe in the possibility of a successful Bay of Pigs operation.

Rows 8 and 9 show the results for Guatemala and Iran, respectively. Guatemala shows an immediate and significant 4.9% increase, which continues to grow to 16.5% after four days and 20.5% after seven days, also significant at 5% confidence. After this, the coefficient in the Guatemala subsample is not statistically significant, although the point estimate generally remains large. In the Iran subsample, we do not see an immediate reaction to the event, but we do see a significant 7.4% effect after 4 days, increasing to 10.3% after 7 days and continuing to increase to 20.2% at 16 days, all significant at the 1% or 5% level. Overall, our country results shows that in the three out of the five countries with statistically significant effects, the results were visible and clear within four days. However, in all these cases, the effects tended to grow over the following days, consistent with slow diffusion of private information into asset prices.

The effects reported in Table IV are for a hypothetical company that was fully nationalized. To obtain the average effect for the sample of companies in a given country, we would need to multiply the coefficient by the mean exposure for companies in that country. The average exposure in the sample was 17.9%, so the second column of Table IV implies that the cumulative return in the sample companies was 1.6% after four days. As a specific

5. “When Kennedy reads the [NYT] story he exclaims that Castro doesn’t need spies in the United States; all he has to do is read the newspaper” (Wyden 1979).



example, Union Minière had 33.8% of its overall assets exposed, which implies that the cumulative abnormal return in the Congo subsample was 7.6% after four days. Similarly, United Fruit had 14.8% of its assets exposed, which implies a 2.4% return over four days. Finally, Anglo-Iranian had 31.0% of its assets nationalized in Iran, and so the implied cumulative four-day increase following an authorization event for that company was 2.3%.

Figure I provides graphical evidence, parallel with Table IV, on abnormal returns around an authorization event, with 95% confidence intervals shown. We compute cumulative abnormal returns  $CAR(k)$  using the regression method aggregated across events for each of the 20 days prior to as well as following an event. For the 20 days prior to the event, we aggregate backward starting

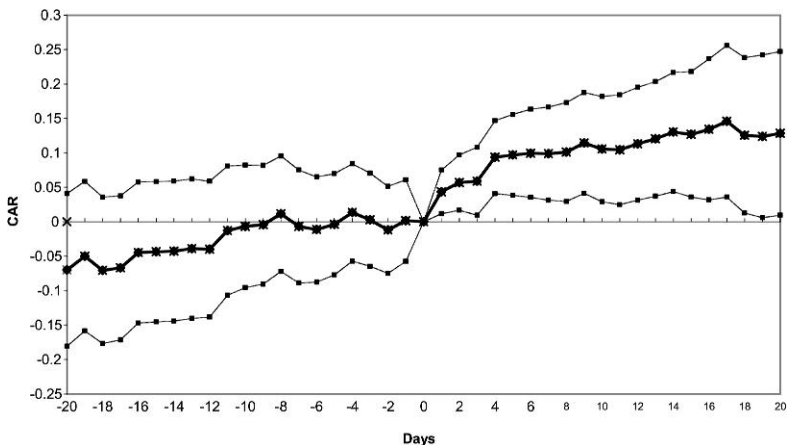


FIGURE I  
Cumulative Abnormal Returns: All Countries

The thicker line represents the average of country-specific coefficients on an indicator for authorization events interacted with company exposure, multiplied by the length of the window. The horizontal axis labels denote the number of days before or after the authorizations which are included as part of the dummy variable for the authorization event, e.g., 4 refers to the return between the event date and four days after the event date while -4 refers to the return between four days prior to the event date and the event date. All regressions control for an interaction of a country-specific company dummy with the four Fama-French factors. All dates where a company changed its name or changed its outstanding shares by more than 5% were dropped. One day price changes greater than 50% in magnitude were dropped. The thinner lines (and square symbols) represent the 95% confidence intervals using standard errors that are the maximum of clustered by company, clustered by date, and robust.

at the event date (date 0), so  $CAR(-k)$  is the cumulative abnormal return between dates  $-k$  and 0. For returns starting prior to date 0, we also include as a control an indicator for a 10-day period after an authorization date, in the case when the events are sufficiently close together that cumulative returns *prior to* one authorization event includes returns that *follow* another authorization event. The only country where the windows overlap is Iran, and none of the other figures look different if we do not account for the overlap in  $CAR(k)$  and  $CAR(-k)$  windows when cumulating over days prior to the event. For our full sample, cumulative abnormal returns become significant at a 5% level on the day of an event and remain significant. The rise over this period is generally monotonic until day 16 and seems to be permanent. Considering returns prior to the event date, however, the  $CAR(-k)$ 's show no trends and are never significant. We conclude that there was no pre-existing trend in the stock price prior to an event, suggesting that the CIA did not authorize coups in response to proximate drops in the value of connected companies or pre-existing political trends that would also be priced into the stock return. Figure II shows the  $CAR$  graphs separately by country. As expected, individual country time paths are more imprecise due to sample size limitations, with consistently significant results only in Congo, Guatemala, and Iran. There is no evidence of a persistent and significant pretrend in any of the individual countries. Overall, the evidence on timing shows that authorization events led to positive asset price movements—usually with some lag.

### V.B. Robustness

Our benchmark specification (second column of Table IV) shows that abnormal returns were positive and significant in the four days following an authorization event. However, this could be due to downturns in the broad market, contemporaneous information about public events, or positive industry-specific shocks. To show that the positive abnormal returns reflect changes in company-specific returns, we consider a number of robustness checks in Table V. All are estimated for the pooled sample, the set of successful coups, and separately by country. We compute cumulative abnormal returns over a four-day period following an authorization event. Except for the first and fifth columns, all specifications include the four Fama-French factors interacted

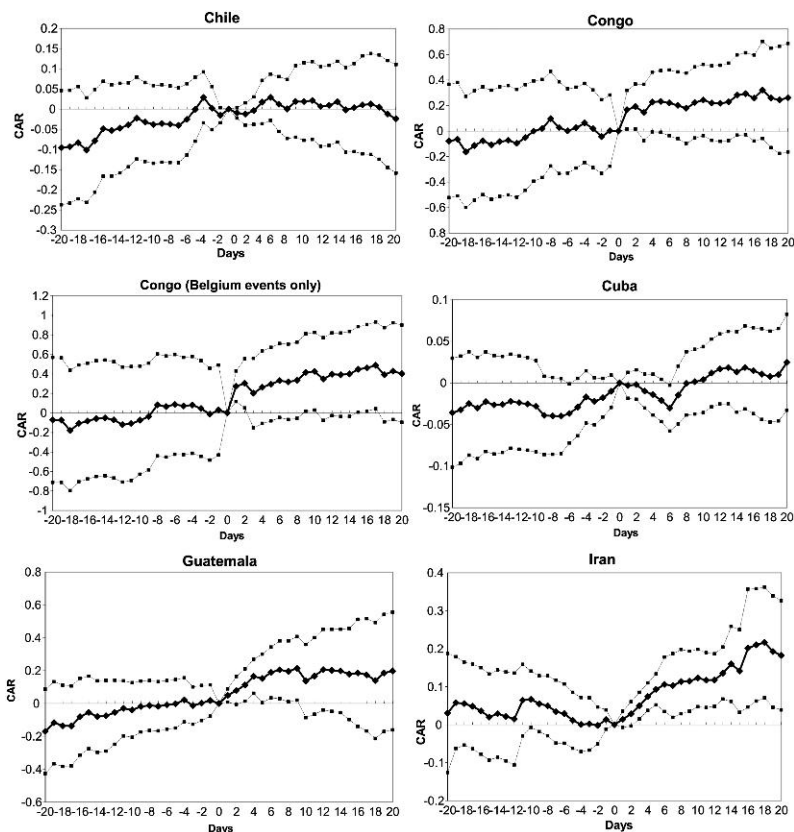


FIGURE II  
Cumulative Abnormal Returns by Country

The thicker line represents the coefficients on an indicator for authorization events interacted with company exposure, multiplied by the length of the window. The horizontal axis labels denote the number of days before or after the authorizations which are included as part of the dummy variable for the authorization event, e.g., 4 refers to the return between the event date and four days after the event date while  $-4$  refers to the return between four days prior to the event date and the event date. All regressions control for an interaction of a company dummy with the four Fama-French factors. All dates where a company changed its name or changed its outstanding shares by more than 5% were dropped. One day price changes greater than 50% in magnitude were dropped. The thinner lines (and square symbols) represent the 95% confidence intervals using standard errors that are the maximum of clustered by company, clustered by date, and robust.

TABLE V  
ROBUSTNESS

	Raw Returns	Public Events/NYT	No NYT News Subsample	Trend Controls	Market Placebo	Matched Placebo	Log Volume
All Coups	0.0947 (0.0282)***	0.0723 (0.0222)***	0.1249 (0.0137)***	0.0989 (0.0034)***	0.0002 (0.0011)	0.0068 (0.0216)	19.0429 (2.2102)***
Successful Coups	22157 0.1210 (0.0350)***	22157 0.0939 (0.0275)***	7123 0.1153 (0.0332)***	22157 0.1259 (0.0372)***	22157 -0.0013 (0.0082)	17239 0.0111 (0.0268)	20895 26.4944 (3.3202)***
Chile	8555 0.0365 (0.0371)	8555 0.0191 (0.0279)	5224 0.1006 (0.0765)	8555 0.0243 (0.0319)	8555 0.0154 (0.0136)	6670 -0.0149 (0.0317)	7324 20.4970 (0.7534)***
Congo	6091 0.2274 (0.1180)*	6091 0.1202 (0.0909)	3530 - -	6091 0.2532 (0.1282)**	6091 -0.0067 (0.0133)	4764 -0.0245 (0.0216)	6091 - -
	421	421	-	421	421	322	-

TABLE V  
(CONTINUED)

	Raw Returns	Public Events/NYIT	No NYT News Subsample	Trend Controls	Market Placebo	Matched Placebo	Log Volume
Cuba	0.0103 (0.0138)	-0.0154 (0.0124)	0.0276 (0.0365)	-0.0098 (0.0144)	0.0066 (0.0088)	-0.0085 (0.0145)	4.1386 (2.5058)*
Guatemala	0.1394 (0.0628)**	0.1648 (0.0530)***	0.1373 (0.0603)**	0.1909 (0.0621)***	-0.0311 (0.0224)	0.0255 (0.0316)	32.4391 (12.5956)**
Iran	1234 0.0806 (0.0189)***	1234 0.0738 (0.0189)***	1068 1901 (0.0137)***	1234 0.0359 (0.0305)	1234 0.0171 (0.0146)	965 0.0528 (0.0400)	1233 - -
	809	809	398	809	809	619	-

Notes. Estimates are on (0,3) returns. For single country regressions, the reported coefficient is on an indicator for authorization events interacted with company exposure, multiplied by the length of the window (i.e., 4). Multicountry regressions report the mean of the country coefficients. Except for the "Raw returns" and "Market Placebo" specifications, regressions control for an interaction of a company dummy (or country-specific company dummy for multi-country regressions) with the four Fama-French factors. All dates where a company changed its name or changed its outstanding shares by more than 5% were dropped. One-day price changes greater than 50% in magnitude were dropped. "Successful coups" exclude Cuba. Public information controls include (a) an exposure-interacted country specific effect of the number of *New York Times* articles mentioning a country and leader by name and (b) country-specific interaction between public event dummies and exposure. No NYT column drops all observations with any *New York Times* articles mentioning a country and its leader by name on that date. "Trend Controls" control for local trends by including an additional dummy in a 20-day symmetric window around each authorization date. "Market Placebo" regresses the NYSE return on the exposure-interacted event dates. "Matched Placebo" replaces each company's stock return with that of the company with the closest market capitalization, factor loadings, and mean and standard deviation of returns within the same 3-digit SIC code. "Log Volume" runs the baseline specification with the log of volume as the dependent variable. Standard errors reported in parentheses are the maximum of clustered by company, clustered by date, and robust. Statistical significance at 10%, 5%, and 1% levels is denoted by \*, \*\*, and \*\*\*, respectively.

with a company dummy (or country-specific company dummies for multi-country regressions) as controls. As in Table IV, we report the coefficient on the authorization dummy interacted with the company's exposure, multiplied by the number of days in the window (four in this case); multicountry estimates average the coefficients across the countries.

First, we regress raw returns, unadjusted by any of the market factors, on our authorization events. We confirm that the cumulative abnormal return effects were due to increases in the affected company's stock prices, and not due to changes in market-level movements. The first column of Table V shows a four-day cumulative abnormal return of 9.5%, virtually identical to our benchmark specification.

Top-secret decisions to overthrow foreign governments may have coincided with public events in the targeted countries. This could bias our estimates, reflecting the effect of public news rather than private information. In the second, we control for the number of articles in the *New York Times* mentioning both the country and the country leader by name, as well as other public events; these other events are nationalizations of foreign-owned property as well as electoral transitions and consolidations which are also mentioned in the timelines. Public events are listed in Online Appendix Table AI. We multiply these measures with company exposure and the country dummies, and include them as controls in our main specification. The coefficient in the pooled sample is only slightly smaller than the one in the main specification, and still shows a 7.2% four-day return which is significant at the 1% level. In the third column we drop all dates where the *New York Times* had at least one article mentioning both the country and the leader by name (Meulbroek 1992). Since most days have at least one political article about the coup countries, we lose over two-thirds of our sample in this specification, making this a strong test. However, our effect actually becomes stronger despite the country with the largest baseline effect, Congo, dropping out of the sample. The mean effect in the pooled country sample is a 12.5% return over four days and still significant at the 1% level. Congo is very prominently covered in the news, and hence does not have any events that are not contemporaneous with some *New York Times* coverage. Though all the countries lose observations from the sample restrictions, the estimates for Chile and Iran are actually larger than in the baseline specification, and the coefficients

for Guatemala and Iran are still significant at least at the 5% confidence level. Cuba only has one authorization date that has no contemporaneous *New York Times* articles about Cuba and Castro, reflecting the extensive leakage of the Bay of Pigs operation as well as general news interest in Cuba over the sample period. The scaling back of the second operation, Mongoose, on February 2, 1962, does indeed fall on a news-free day. Although not significant, the positive and relatively larger coefficient on this subsample is consistent with our interpretation that secret deauthorizations do cause decreases in stock prices when they actually constitute “news.”

One potential explanation for our findings is price momentum around the authorization dates. This may either reflect pre-existing information flows or trading activities unrelated to coup planning. We include a control that interacts the exposure measure with a dummy that is equal to 1 in a 20-day window around each authorization event. This specification tests whether the abnormal returns are higher in the 4 days right after an authorization than in the average of the 20-day period surrounding each authorization event. The fourth column of Table V shows that the four-day abnormal return is 9.9%, actually slightly higher than our benchmark, and statistically significant at the 1% level. Pre-existing price trends do not explain our results.

We also consider two placebos. In the fifth column of Table V we regress NYSE index returns on our private information variable, omitting the other three factors. Our pooled estimate is equal to 0.02% and is insignificant. None of the country-specific regressions are significant at the 10% level either. In the sixth column of Table V, we use daily stock returns from a matched company, where the match is constructed by taking the company closest in the Mahalanobis metric (constructed from market capitalization and market beta) within each three-digit industry code, subject to having data available for all of the authorization dates. The matched companies are listed in Online Appendix Table AII. This placebo is also insignificant in the pooled sample as well as all the subsamples, suggesting that our effects are not driven by industry-specific shocks.

Finally, we consider the effect of authorizations on the log of trading volumes for the set of countries for which data is available. In both the pooled samples as well as the individual country regressions, our event variable is positive and significant. This is true even in Chile and Cuba, where the effect on returns

was insignificant. The finding of increased trading in the four days including and just after authorization days is consistent with theoretical predictions of heterogeneous belief models (Wang 1994) of stock trading as well as prior empirical work on the volume impacts of insider trading (Cornell and Sirri 1992).

#### V.C. Time-Shifted Placebos

As additional evidence that our effects are not an artifact of the data, we reestimate our main specification on a set of placebo dates. We take our 4-day cumulative abnormal returns and shift our authorization events forwards as well as backward by 5, 10, 15, 20, 25, 30, 35, and 40 days. For an  $s$  day shift, we estimate:

$$(4) \quad R_{ft} = \mathbf{X}_t \beta_f + \gamma_{c,s} E_{ft+s}(4) + \epsilon_{ft}$$

As in our baseline specification, we report the mean cumulative four-day return across countries:  $\frac{\sum_c \gamma_{c,s}}{C}$ . We exclude all days with other authorizations, public events, or that occur during the coup itself. We graph our estimates against the number of days shifted in Figure III.

Out of the 19 time-shifted regressions,  $\gamma_s$  is only significant for  $s = 0$ , our benchmark specification with cumulative abnormal return of approximately 9.38% for a fully exposed company, which is significant at the 1% level. None of the 18 other dates have a magnitude above 4% and none of them are significant at even the 10% level. The placebo estimates reinforce that our baseline estimates are not due to local serial correlation in returns. The pattern of no abnormal returns before a decision, sizable abnormal returns just after a decision, and smaller possible abnormal returns in the medium run after a decision is consistent with our hypothesis of secret authorization events causing an increase in the stock price.

#### V.D. Small Sample Tests

In Table VI, we present the results from our small sample tests. First, we present the four day *CARs* of country portfolios, based on out-of-sample estimates. The *CARs* here represent the actual (exposure-weighted) change in stock prices for affected companies in a given sample, while the regression coefficients represent the effects for a hypothetical company that was fully exposed. For comparability, the regression coefficients would



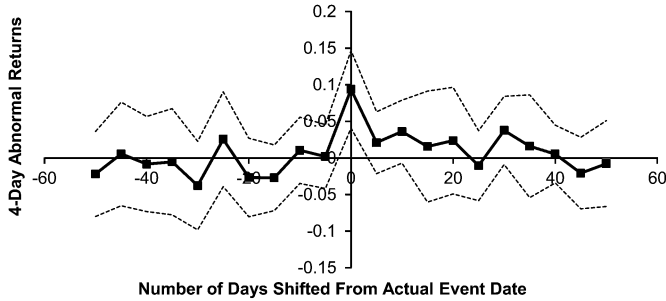


FIGURE III  
Time-Shifted Placebos

The thick line plots the average of country-specific coefficients for a regression of daily stock returns on an indicator for authorization events interacted with company exposure and multiplied by the four day window including and after an authorization event. The horizontal axis labels denote the number of days by which we shift the authorization date, e.g., 20 represents the four day return if we shift the authorization day forward by 20 days, while  $-20$  represents a four day return if we shift the authorization date backwards by 20 days. All regressions control for an interaction of a country-specific company dummy with the four Fama-French factors. All dates where a company changed its name or changed its outstanding shares by more than 5% were dropped. One day price changes greater than 50% in magnitude were dropped. The dashed lines represent the 95% confidence intervals using standard errors that are the maximum of standard errors clustered by company, clustered by date, and robust.

need to be multiplied by mean exposure levels, although the comparability is inexact due to how exposures are treated in the two cases. The results are listed in row 1 of Table VI. For the full sample, the average four-day weighted CAR was 2.6%. The estimate is statistically significant at the 1% level using asymptotic standard errors.

Turning to our small sample tests, we find that 18 out of the 22 events in the full country sample have returns greater than the median return in the “estimation window” (i.e., the year prior to any nationalization event), producing a one-sided probability value under the null hypothesis of 0.35%.<sup>6</sup> Thirteen of those events have returns above the 80th percentile, which would occur by chance alone with probability less than 0.02%. Eight of the events have returns greater than the 90th percentile, which has

6. In the text, we report the higher of the analytical and simulated probability values. Both are reported in the table. All reported probability values are one-sided.

TABLE VI  
SMALL SAMPLE TESTS

	5	Country	Successful Coups	Chile	Congo	Cuba	Guatemala	Iran
4 Day CAR	0.0262		0.0393	0.0189	0.0768	-0.0086	0.0239	0.0243
Asymptotic Standard Error	(0.0030)***		(0.0039)***	(0.0149)	(0.0195)***	(0.0076)	(0.0093)**	(0.0165)
Number of Events	22		16	4	5	6	4	3
Binomial Sign Test	18		15	3	5	3	4	3
Number Above Median								
Median								
P-Value: Analytical	0.0022***		0.0003***	0.3125	0.0313**	0.6563	0.0625*	0.1250
P-Value: Simulated	0.0035***		0.0006***	0.3294	0.0355**	0.6602	0.0688*	0.1357
Number Above 80th Percentile	13		12	2	5	1	3	2
P-Value: Analytical	0.0001***		0.0000***	0.1808	0.0003***	0.7395	0.0272**	0.1040
P-Value: Simulated	0.0002**		0.0000***	0.1921	0.0005***	0.7403	0.0314**	0.1033
Number Above 90th Percentile	8		8	2	3	0	3	0

TABLE VI  
(CONTINUED)

	5 Country	Successful Coups	Chile	Congo	Cuba	Guatemala	Iran
<i>P</i> -Value: Analytical	0.0009****	0.0001***	0.0523*	0.00856***	1.0000	0.0037***	1.0000
<i>P</i> -Value: Simulated	0.0011**	0.0003***	0.0502*	0.0126**	1.0000	0.0059***	1.0000
Uniform Rank Test	0.7440	0.8195	0.6417	0.9350	0.4418	0.8803	0.8211
<i>P</i> -Value: Analytical	0.0000***	0.0000***	0.1700	0.0000***	0.6852	0.0022***	0.0257**
<i>P</i> -Value: Simulated	0.0006****	0.0000****	0.1766	0.0001***	0.6952	0.0035***	0.0261**

Notes. This table reports 4 Day Cumulative Abnormal Returns using (exposure weighted) company portfolios for individual countries. Multicountry estimates report averages of country portfolio returns. Asymptotic standard error is computed using standard deviations of returns in the estimation sample. \*, \*\*, and \*\*\* denote statistical significance using asymptotic inference at the 10%, 5%, and 1% levels, respectively. "Successful Coups" excludes Cuba.

For the Binomial Sign Test, "Number above the median" (and 80th and 90th percentiles) reports the number of 4-day events above the median (and 80th and 90th percentiles) of the abnormal return distribution in the estimation window. *P*-Value: Analytical<sup>1</sup> reports the associated *P*-Value using the Binomial Distribution to give the probability of having at least *X* number of events above the cutoff (median or 80th or 90th percentile). *P*-Value: Simulated<sup>2</sup> reports the *p*-value for a simulated distribution of having at least *X* number of events above the cutoff (median or 80th or 90th percentile) out of *Y* total events, accounting for the cutoff value being estimated using the actual number of days in the estimation sample.

For the Uniform Rank Test, "Mean rank" is the average percentile rank of abnormal returns for events relative to the estimation window. *P*-Value: Analytical<sup>3</sup> uses the uniform distribution to calculate the probability of having an average rank of *K* events greater than or equal to *M*. *P*-Value: Simulated<sup>4</sup> reports the *p*-value for a simulated distribution of having an average of *K* events having rank greater than or equal to *M*, accounting for the ranks being estimated using the actual number of days in the estimation sample.

an associated probability value of 0.11% under the null. Finally, the average rank of all 22 events is 0.74, which would be obtained by chance with a probability less than 0.06%. When we consider the set of four successful coups, the conclusion is strengthened. The probability values associated with the uniform rank test, as well as the binomial sign tests (for 50th, 80th, and 90th percentiles) are all under 0.1%.

Due to small sample size, the individual country tests have low power and thus  $p$ -values are larger. Congo and Guatemala consistently produce probability values under 10% for all the tests, and smaller for most. Iran produces probability values ranging between 3% and 14% except for the 90th percentile, whereas Chile ranges from 5% to 33%. Finally, consistent with our results, Cuba shows no systematic increase in returns following authorization events. For example, only three out of the six events show positive returns, and the rest are negative.

Our results also show heterogeneity across events. Though there does not seem to be a substantial reaction to a few events, most show positive reactions. And many show reactions that were very strong, as exemplified by the fact that 8 out of 22 events are above the 90th percentile in returns.

Overall, our modified sign and rank tests provide strong evidence that the four-day returns after authorization events are, on average, highly statistically significant, and our conclusions are not driven by the size of our sample and non-normal distribution of returns. Also, they show us that there are reactions to some events and not to others. However, when there is a reaction, the effect is strong and unmistakable.

## VI. ASSESSING THE GAINS FROM COUPS

We also estimate abnormal returns for the coup attempts themselves using our main specification. We do this for two reasons. First, we want to test if these companies were affected by the actual coup attempts, confirming that companies were benefiting from the anticipated regime change. Second, we want to compare the direct effect of the coup itself to the total net rise due to precoup authorizations.

We look at two estimates of the effect of the coup: abnormal returns during the coup window and abnormal returns on the first day of the new regime. We define the coup window as the period from and including the first day of the coup to and including the

first day of the new regime (the last day of the coup attempt in the case of Cuba). These dates are listed in Table VII.

Over the duration of the coup, the average cumulative return across countries was 12.1%. The result is slightly higher at 13.4% when we restrict attention to the successful coups. The first day of the new government measure is slightly lower for both the full as well as successful coups samples at 10.0% and 11.8%, respectively.

The individual country estimates are also relatively similar across the two measures for most of our sample. Chile's and Congo's coups are both one-day events, and so the effect is identical across measures: 6.1% and significant at the 5% level for Chile and 8.7% and insignificant at conventional levels for Congo. The effects for Cuba are near -5% for both measures. The first day of the new government effect is significant at the 1% level, reinforcing that there is belief in the possibility of a successful coup in Cuba.<sup>7</sup> The coup window effect is larger for Iran than the first day of the new government. The coup window effect, 18.8%, is significant at the 10% level; the first day of the new government effect is substantially smaller at 7.0%. For Guatemala, the sign actually flips. The coup window effect for Guatemala is negative and somewhat sizable. The first day of the new government effect, however, is quite a bit larger and positive in sign. The two numbers are -10.3% and 22.7%, the latter number being statistically significant at the 1% level. We attribute the stock price fall over the coup window to the fact that the junta which initially took power when Arbenz resigned did not support the return of assets to United Fruit. Further exacerbating the uncertainty around United Fruit assets, the 11-days following Arbenz's resignation saw four interim governments come to power. Finally, the candidate backed by the CIA, Castillo Armas, took power (Glejeses 1991). Despite the uncertainty, Armas eventually returned United Fruit assets.

We now compare the magnitudes of the net authorization events to the coup event effects. We use the country-specific 13-day CARs to compute the value per authorization for each country. The longer horizon return is used to capture the full asset price change due to a leaked authorization. The total rise in the stock price due to authorizations is then just one plus the return to

7. In a prior version of the article, we also included an estimate of the return on the first day of the coup. For Cuba, the estimate was positive and significant, reinforcing the view that some traders thought that a successful coup was possible.

TABLE VII  
GAINS FROM COUP AND AUTHORIZATION EVENTS

	Coup Begins	Coup Ends	Coup Window	First Day of New Government	12 Day Auth. Effect	Total Gain from Auth. Events	Total Gain from Auth and First Day New Gov	Relative Gain from Auth. Events
All			0.1211 (0.0463)***	0.1004 (0.0259)***	0.1204	0.3136	0.4455	0.7575
Top 4			22173 0.1335 (0.0603)**	22165 0.1179 (0.0419)***	0.1459	0.4248	0.5928	0.7828
Chile	9/11/1973	9/11/1973	8571 0.0613 (0.0250)**	8563 0.0613 (0.0250)**	0.0183	0.0750	0.1410	0.5503
Congo	2/5/1961	2/5/1961	6097 0.0869 (0.0947)	6097 0.0869 (0.0947)	0.2283	0.2283	0.3350	0.7242
			421	421				

TABLE VII  
(CONTINUED)

	Coup Begins	Coup Ends	Coup Window	First Day of New Government	12 Day Auth. Effect	Total Gain from Auth. Events	Total Gain from Auth and First Day New Gov	Relative Gain From Auth. Events
Cuba	4/15/1961	4/20/1961	-0.0445 (0.0283)	-0.0546 (0.0141)***	0.0183	0.0370	-0.0196	-2.1047
			13602	13602				
Guatemala	6/19/1954	6/28/1954	-0.1030 (0.1737)	0.2274 (0.0704)***	0.2011	0.4426	0.7706	0.6606
				1235				
Iran	8/15/1953	8/20/1953	0.1875 (0.1054)*	0.0703 (0.0526)	0.1359	0.4657	0.5686	0.8689
			813	810				

Notes. For single-country regressions, the reported coefficient is on an indicator for the relevant coup period interacted with company exposure, multiplied by the length of the relevant coup period. Multicountry regressions report the mean of the country coefficients. The coup window is defined as the full length of time between the beginning and the end of the coup. The first day of the new government is the first day after the coup (in the case of Cuba, this is the first day after the end of the invasion). All regressions control for an interaction of a company dummy (or country-specific company dummy for multicountry regressions) with the four Pama-French factors. All dates where a company changed its name or changed its outstanding shares by more than 5% were dropped. Since Cuba's coup was unsuccessful, the stock price changes are negative. Standard errors reported in parentheses are the maximum of those clustered by company, clustered by date, and robust. Statistical significance at 10%, 5%, and 1% levels is denoted by \*, \*\*, and \*\*\* respectively. Per event authorization event gain is the cumulative abnormal return over a 13-day period for a company in a country estimated individually. Total gains from authorization events is one plus the abnormal return to the power of the number of net events; in the case of Guatemala, the number of net events is 2 out of total 4 events since 1 event is an aborted coup and thus counted as negative; in the case of Congo, the number of net events is 1, because out of 5 events, 2 are negative; in the case of Cuba, the net events is 2 because 2 of the 6 events are negative. The multicountry decomposition raises one plus the estimated mean multicountry effect to the power of the average number of events across the relevant countries and uses the relevant multicountry first day of new government estimate for the gain from the coup event. The total gain from authorization plus coup events is the cumulative gain from the authorization events times one plus the gain from the first day of the new government. The relative gain from authorization events is the share of the total gain from the coup (including stock market rises) due to authorization events.

an authorization raised to the power of the net number of events<sup>8</sup> plus the return over the coup window:

$$(5) \quad (1 + R_{C,Auth})^N (1 + R_{Coup}),$$

where  $R_{C,Auth}$  is the 13-day cumulative abnormal return in country  $C$ ,  $N$  is the net number of authorization events, and  $R_{Coup}$  is the cumulative abnormal return in country  $C$  on the first day of the new regime. We use the return on the first day of the new government because, due to the length of the coup in Guatemala and the ensuing political instability after the end of the Arbenz regime, there is a net negative change in the stock price over the exact coup window.

The results are listed in Table VII. Though we can combine the effects of the authorization events and the coup itself in most of the countries, the failure of the operation in Cuba makes interpretation of the resulting comparison difficult. Thus we interpret the Cuba numbers as the relative magnitude of stock price movements from the coup event and the authorization events. The inclusion of Cuba in our cross-country sample also makes the full sample decomposition difficult to interpret. Although we report both the Cuba decomposition and full sample decomposition, we focus on the successful coup sample and the other four countries.

If we assume the only source of coup-related asset price movements are our events, together with the coup itself, we can estimate the total gains from the coup. The average gain per authorization in the all country sample is 12.0%, and the mean return on the first day of the postcoup regime is 10.0%. For the set of successful coups, the gain from authorization events is roughly three times that from the coup events; 75.5% of the relative gain comes from authorization events. By country, the total gains from the coup ranged greatly. For a fully exposed company, the returns range from 14.1% in Chile to 77.1% in Guatemala. We also compute that the relative percentage benefit of the coup attributable to ex ante authorization events, which amounted to 55.0% in Chile, 66.1% in Guatemala, 72.4% in Congo, and 86.9% in Iran.

8. In the case of Guatemala, the number of net events is two out of a total of four events since one event was an aborted coup and thus counted as negative; in the case of Congo, the number of net events is one, because out of five events, two are negative; in the case of Cuba, the net events is two because two of the six events are negative. For the pooled country samples, we use the mean number of events across countries as the net events. Thus gives us 2.6 for the full country sample and 2.4 for the successful coups sample.



Overall, much of the gains from the coup occurred before the coup itself due to speculation from top-secret information. This suggests that estimates of the value of the coup to a company that only considered the stock price reaction to the coup itself would be dramatically understated.

## VII. CONCLUSION

Covert operations organized and abetted by foreign governments have played a substantial role in the political and economic development of poorer countries around the world. We look at CIA-backed coups against governments that had nationalized a considerable amount of foreign investment. Using an event-study methodology, we find that private information regarding coup authorizations and planning increased the stock prices of expropriated multinationals that stood to benefit from the regime change. The presence of these abnormal returns suggests that there were leaks of classified information to asset traders. Consistent with theories of asset price determination under private information, this information often took some time to be fully reflected in the stock price.

We find that coup authorizations, on net, contributed substantially more to stock price rises of highly exposed companies than the coup events themselves. This suggests that most of the value of the coup to the affected companies had already been anticipated and incorporated into the asset prices before the operation was undertaken.

Our results are robust to a variety of controls for alternate sources of information, including public events and newspaper articles. They are also robust across countries with the exception of Cuba. The anomalous results for Cuba are potentially due to public information leaks and inadequate organization that surrounded that particular coup attempt. Our results are consistent with evidence in political science that business interests exert disproportionate influence on foreign policy (Jacobs and Page 2005), as well as historical accounts that suggest that protecting foreign investments was a motivation for undertaking regime change (Kinzer 2006). However, further empirical research is needed to uncover whether economic factors were decisive determinants of U.S. government decisions to covertly overthrow foreign governments.

UNIVERSITY MASSACHUSETTS AMHERST AND IZA  
 UNIVERSITY OF MARYLAND AT COLLEGE PARK AND INSTITUTE FOR  
 INTERNATIONAL ECONOMIC STUDIES, STOCKHOLM UNIVERSITY  
 COLUMBIA UNIVERSITY AND NBER

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