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Government Ownership and the Public Information Content of Insider Trading: International Evidence

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ABSTRACT   This paper investigates the political determinants of informed insider trading using an international sample of firms from 28 countries. We show that insider trading in state-owned firms (SOEs) is statistically and economically more profitable and informative than in non-state-owned firms, indicating a unique *political* information advantage enjoyed by these insiders. Further analysis shows that insider trading in government-owned firms becomes more profitable during nationwide periods of political uncertainty and when industry-specific government actions are introduced. Moreover, the aggregate insider trading in SOEs better predicts future stock market returns than that in non-SOEs. These results suggest that the political information advantage of SOE insiders is evident in both the idiosyncratic and macroeconomic information content of insider trading, consistent with the superior ability of these insiders to interpret the economic impact of the country-, industry-, and firm-specific government actions.

1. Introduction

Despite the wave of state privatizations early in this millennium, the past decade has witnessed a global resurgence of government involvement in business affairs through holding shares of private enterprises following the 2007–2008 global financial crisis (Borisova et al., 2015), the economic rise of a China-style business model (Megginson 2017), and the recent COVID-19 health crisis (OECD, 2020). While extensive literature provides valuable insights into its benefits

and costs at the firm level,[1] little is known about the implications of state ownership for individual corporate executives.[2] This study examines how government ownership shapes corporate executives' private incentives, focusing on informed insider trading. This is a pervasive governance issue worldwide and a key concern of government shareholders, who are typically charged with ensuring financial market efficiency and transparency. Our study focuses on whether and how government ownership drives informed trading by corporate officers and directors (hereafter, 'corporate insiders').

Much of the literature emphasizes the typical agency problem associated with government shareholders. This line of literature suggests that state-owned firms' (SOEs) shareholders are 'entrenched bureaucrats' (Chen et al., 2018) whose objective is to protect their political interests instead of maximizing private owners' wealth. Consequently, SOEs exhibit poorer corporate governance (Borisova et al., 2012) and more opaque information environments (Ben-Nasr et al., 2015; Guedhami et al., 2009). Such weakened governance and information opaqueness within state-owned firms are conducive to informed insider trading on firm-specific information.

While prior studies may ascribe an overall increase in informed trading in SOEs to the asymmetric distribution of information due to the weak governance problems, we propose an alternative interpretation by highlighting a unique *political* information advantage of SOE managers. Frequent interactions with government shareholders position SOE managers to gain superior access to *political* information from government officials related to impending changes in public policies, government actions, and political parties. This information edge potentially allows SOE insiders to evaluate the impact of political changes on their firms, industries, and the general economy.[3] In line with this political information transfer hypothesis, we expect that SOE insiders conduct more informative trading in their company stocks than non-SOE insiders if these insiders incorporate their political information advantage into their trading process.

This study tests our central hypothesis on an international sample of insider trades. We measure insider trading profitability using the market-adjusted abnormal returns over the 180-day window from the transaction date. The disclosed insider transaction-level data for a global sample are extracted from the 2iQ database. Our results show that corporate insiders in state-owned

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[1]Extant literature has documented varying corporate outcomes associated with government ownership across countries. Megginson et al. (1994) and DeWenter and Malatesta (2001) provide empirical evidence that government-owned firms allocate resources less efficiently and are less profitable and productive than privately owned ones. This line of literature is built on the agency problems arising from the presence of state actors in the corporate ownership structure (Borisova et al., 2012). In contrast, government-owned firms are shown to enjoy lower financing costs and ease of accessing bank credit (Claessens et al., 2008; Houston et al., 2014), higher equity valuation (Faccio, 2006), higher bailout probabilities (Faccio et al., 2006), and better allocation of government contracts (Schoenherr, 2019).

[2]Two notable exceptions are related to managers' political promotion incentives in Chinese state-owned companies (Kong et al., 2020) and CEO compensation packages and policies among EU firms (Borisova et al., 2019). However, given each country's unique economic and political institutions, these private managerial incentives may not be generalizable in an international context.

[3]The notion that government officials have superior access to material information about government policies toward specific firms, industries, and the whole economy compared to other market participants is borne out anecdotally in and out of our sample. In our sample, there are cases of salient insider trades in government-owned firms during the year leading up to national elections. For instance, insiders at Air France, whose 15% of shares were owned by the French government at the time of trading, made a share purchase on 30 March 2012 – less than one month before the national election date on 22 April 2012. This purchase generated a daily alpha of 0.27%, significantly higher than the average alpha of -0.21% for insider trades of the same company made between April 2010 and April 2011. Another example is insiders from Telenor ASA operating in Norway, a state-owned multinational telecommunications company. On 18 March 2009, an insider of Telenor purchased more than \$13 m of its shares when the share price was approximately \$5 per share. The share price doubled on the national election date on 14 September 2009. The profits made from this trade were significantly higher than an average daily loss of -0.16% for insider trades of the same company made between September 2007 to September 2008. These real-world examples highlight the political information edge of SOE insiders during critical political periods. Additional anecdotal evidence in Online Appendix A supports this argument for government officials during the COVID-19 pandemic.

firms earn significantly higher abnormal returns from trading in a matched sample of 85,221 insider transactions from 1609 unique firms in 28 countries (i.e., 366 SOEs and 1243 non-SOEs) between 2003 and 2016. This finding holds even after controlling for the asymmetric information environment inherently arising from the traditional agency problem. From an economic perspective, SOE insiders make a 0.013% higher daily abnormal profit (3.65% annualized abnormal stock return) than insiders in privately owned companies over a 180-day window after the transaction, a deviation of about 65% from the sample mean.

To further explore our results, we perform an event study to ascertain that other unobservable firm characteristics do not drive the primary findings. Specifically, we examine whether and how insider trading profitability changes when a firm's government equity ownership switches from zero to non-zero relative to control firms whose government ownership remains zero during the same period. Consistent with the baseline inferences, we observe a significant increase in insider profits when a firm turns from a non-SOE to an SOE. The same setting also uncovers evidence of SOE managers' motives in making more profitable trades. In particular, we find a significant decline in executive remuneration after the firm becomes an SOE. The collective evidence infers that SOE managers might resort to informed insider trading to compensate for their comparatively lower remuneration. In addition, we validate the robustness of our baseline inferences by adding additional controls for board characteristics and country-level economic conditions, estimating insider profitability measures over shorter windows, and using alternative samples from various matching approaches.

Next, we shed light on the nature of the political information exchange between politicians and SOE insiders by breaking down this information into its idiosyncratic and macroeconomic components. Our results show that insiders in SOEs gain significantly higher abnormal profits from trading than those in non-SOEs during periods with heightened political and policy uncertainties for the overall economy (i.e., surrounding national elections and international political crises) as well as for specific industries (i.e., the adoption of emissions trading system for polluting industries and the Global Financial Crisis for financial sectors). These findings indicate that SOE insiders can better evaluate the impact of country- and industry-level government actions on their company stocks, suggesting the idiosyncratic information content of insider trades in SOEs.

Building on the prior literature that establishes the link between aggregate insider trading and future stock market return, our further tests reveal that aggregate net insider purchases in SOEs can better predict stock market returns than those in non-state-owned firms. This evidence is consistent with corporate insiders in SOEs possessing superior capabilities of interpreting and forecasting future macroeconomic trends, indicative of insider trades' macroeconomic information content.

Having established evidence of our key predictions, we examine the heterogeneous effects of government ownership on insider profits across different trade-, firm-, and country-level characteristics. First, state ownership amplifies insider profits, mainly via insider sales and trades by top-tier executives. Also, insiders in local firms or politically sensitive industries reap the most from the information advantage from government ownership. Finally, information transparency, strong investor protection institutions, and anti-corruption efforts can counter the effect of government ownership on insider trading profitability.

This study makes significant contributions to the existing literature. Prior studies suggest that government equity ownership undermines corporate financial transparency (Bushman et al., 2004), auditor choice (Guedhami et al., 2009), and earnings quality (Ben-Nasr et al., 2015; Chaney et al., 2011). We complement but differ from these works by probing into the information impact of government ownership at the corporate insider level. More importantly, we uncover new evidence of SOE insiders leveraging close ties with government owners to acquire political knowledge and use it to alleviate both political and macroeconomic uncertainties when making their trading decisions.

Furthermore, we contribute to insider trading literature by focusing on the political infor-
mation advantage of corporate insiders in politically connected companies. In this vein, two
contemporary studies are closely related to ours: one is the study of Jagolinzer et al. (2020),
which documents that politically connected insiders in financial firms traded on the private infor-
mation about the Troubled Asset Relief Program (TARP) infusions during the GFC in the U.S.
The other is Sun et al. (2022), which finds that net insider purchases in politically connected
firms significantly increase in the month firms receive government subsidies in China.

Our work differs from the two studies in four respects. First, while both studies use insid-
ers' personal work experience in government agencies to define political connections and
demonstrate how connected insiders gain foreknowledge of favorable firm-specific government
policies, we study the government's direct involvement in business operations through equity
ownership, which allows government officials to intervene with business decisions directly. As
a result, managers in SOEs have first-hand and timely exposure to politicians, affording them a
unique political information advantage to interpret the economic impact of not only firm-specific
but also country- and industry-level government actions on their own firms. Our results sug-
gest that this holds even if government actions are publicly known and of a macroeconomic
nature. Second, under the public scrutiny of excessive C-suite compensation, we find that the
relatively low managerial pay in SOEs implies a distinct incentive for corporate insiders to
exploit their political information advantage and generate profitable insider trades to compen-
sate for the reduced remuneration. Third, we highlight a new determinant of the macroeconomic
information content of insider trades for firms with government shareholders. This evidence
enriches the existing literature that explores the determinants and market implications of the
macroeconomic information content of insider trades (Brochet, 2018; Henry et al., 2022; Lakon-
ishok & Lee, 2001). Finally, we conduct an international study by stressing the importance of
strong investor protection and information environment transparency in mitigating the political
information advantage of SOE insiders.

The rest of the paper proceeds as follows. Section 2 discusses related literature and develops
testable hypotheses. Section 3 describes the data and sample construction. Section 4 presents our
key empirical results. Section 5 presents further tests for the information content of SOE insider
trades. Section 6 extends our primary analysis with additional analyses, and Section 7 concludes.

2. Literature Review and Hypothesis Development

Unlike typical shareholders, governments usually have incentives to pursue socially desirable
and political objectives, which rarely coincide with profit maximization (Megginson & Netter,
2001; Shleifer, 1998). Under the classical agency framework, government investors could tunnel
corporate resources for political benefits and induce managers to restrict or manipulate the release
of firm-specific information to prevent public awareness and scrutiny of their expropriation activ-
ities (Ben-Nasr et al., 2015; Borisova & Yadav, 2015; Guedhami et al., 2009). Subsequently,
these politically motivated actions lead to a less transparent corporate information environment.
Hence, one can expect that government-owned firms are an opportune ground for insiders to earn
higher profits using their information advantages while trading their company stocks.[4]

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[4]Notably, there is a competing view that government equity ownership incurs greater public scrutiny on informed insider
trades, thereby inhibiting managers from using political resources for personal benefits. Also, state-owned firms may pro-
vide more voluntary disclosures to help politicians establish a public image of accountability (Huang, 2022), weakening
the information advantage of corporate insiders. These arguments advocate a negative relationship between the extent of
government ownership and informed insider trading. However, the extant literature (e.g., Ben-Nasr et al., 2015; Chaney
et al., 2011) seems to disagree with this competing view by documenting an opaque information environment because of

Distinct from the above information asymmetry hypothesis, this study proposes a unique information advantage for SOE insiders. This advantage arises not from utilizing internal information obscured by an opaque environment, but rather from collecting and processing *political* information such as government actions, policy shifts, political movements, and elections – accessible through their connections with government shareholders. We term this hypothesis as 'political information transfer'. Below, we delineate how such information transfer affects the information content of insider trading in SOEs.

As defined by Pastor and Veronesi (2012), the public often faces two types of government-related uncertainties: political uncertainty (i.e., political leadership and policy changes) and impact uncertainty (i.e., the economic consequences of government actions). Political information that mitigates these uncertainties is crucial for businesses and investors because it helps them make informed investment decisions in the changing macroeconomic dynamics. For instance, Christensen et al. (2017) find that sell-side security analysts whose brokerage houses make significant political contributions issue more value-relevant and profitable stock recommendations. Also, Gao and Huang (2016) document the outperformance of U.S. hedge funds connected to political lobbyists.

Following the same logic, insiders in government-owned firms are expected to have a superior ability to access political information. First, differing from conventional political ties, state ownership signals the financial commitments of government officials to the private sector to support their policy agenda (Megginson & Netter, 2001; Tihanyi et al., 2019). Hence, state owners may intervene in their affiliated firms' businesses and engage with SOE management to promote a broader set of social and political goals. By being directly involved in corporate decision-making, SOE managers can have open dialogues with government officials and collect tacit knowledge about ongoing or impending government actions. They may also acquire a better interpretation of the impact of government actions on their firms and the economy with the political intelligence gained through interactions with government officials.

Besides, we argue that corporate insiders in SOEs also have strong incentives to trade on their political information advantage. Government shareholders are under public pressure to uphold social equality and minimize the pay disparity between executives and rank-and-file employees, leading to lower pay for SOE managers (Borisova et al., 2019; Conyon et al., 2011). Thus, engaging in profitable trades can be a nebulous means to camouflage parts of the compensation and offset the explicit pay reduction for managers in SOEs. In addition, profitable insider trading may be exacerbated by weak governance problems, wherein executives in firms with political connections are much less likely to be involved in enforcement actions and face lower penalties if caught (Correia, 2014).

To sum up, the *political information transfer* hypothesis implies a positive association between government ownership and insider trading profitability. We formally state our central hypothesis as follows:

Hypothesis 1: *Government equity ownership is associated with increased insider trading profitability.*

There exists a possibility that the above-predicted positive relationship between government ownership and insider trading profitability could be entirely driven by the weak governance problem of SOEs documented in prior literature. To rule out such an alternative interpretation and better understand the nature of the political information transfer from government shareholders to SOE managers, we further decompose the SOE insiders' information advantage into two components: idiosyncratic and macroeconomic components in the subsequent hypotheses.

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government ownership. Therefore, we emphasize the positive relationship between government ownership and informed trading.

As for the idiosyncratic component, we conjecture that SOE insiders are at an advantage in gathering and digesting government-related information, allowing them to evaluate the impact of government actions on their firms. Government-related information is not limited solely to the macroeconomic environment but can also encompass industry-specific and firm-specific news.[5] The privileged access to political information at the firm, industry, and macroeconomic levels can aid corporate managers in mitigating government policy uncertainty and assessing its *impact* on their firms. This advantage enables them to make more accurate predictions on their firm's future cash flows than other market participants in times of political uncertainty. These discussions lead to the following hypothesis on the idiosyncratic component of SOE insiders' political information advantage:

Hypothesis 2: *Informed insider trading in government-owned firms is more pronounced during politically uncertain periods.*

Previous research (Jiang & Zaman, 2010; Lakonishok & Lee, 2001; Seyhun, 1988, 1992) indicates that the trading choices of corporate insiders are influenced not only by their specific knowledge about their company but also by their perceptions of broader macroeconomic shifts. Drawing upon this line of literature, we anticipate a macroeconomic component of SOE insiders' political information advantage. Suppose SOE insiders base their trades on political information signals about macroeconomic conditions gained through interactions with government shareholders. In this case, they likely possess similar macro information and trade in a particular direction that is more predictive of future macroeconomic changes. To gain insights into the macroeconomic component of SOE insider trades, we first follow the literature and aggregate insider trades at the market level to diversify away the idiosyncratic information signals while retaining the macroeconomic information signals (Brochet, 2018; Lakonishok & Lee, 2001). Then, in line with the macroeconomic information content of SOE insiders' trades, we expect their aggregate trades to provide a more accurate forecast of future stock market returns than those of non-SOE insiders. Therefore, the political information advantage of SOE insiders leads to the third hypothesis on the macroeconomic component as below:

Hypothesis 3: *Aggregate insider trades in government-owned firms are better at predicting future stock market returns than those in privately owned firms.*

3.   Empirical Design

3.1. Sample Selection

This study employs data mainly from the following data sources: (1) global insider trading transactions data from the 2iQ Research dataset; (2) firm-level government ownership and stock trading information from Refinitiv (formerly Thomson Reuters)'s Eikon Datastream database; and (3) financial accounting data from Refinitiv's Worldscope. Below, we discuss the primary data sources and main variable constructions and relegate all other variables' detailed definitions and references to Appendix A.

Our initial sample starts with the firm-level ownership data from Refinitiv's Datastream. The ownership data provides the aggregate ownership in stock by the types of investors who hold

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[5]As an example of acquiring industry-specific information through political connections, Jagolinzer et al. (2020) find evidence of abnormal trading returns by politically connected officers and directors at U.S. financial institutions 30 days before the TARP disbursements. As an example of firm-specific news, Sun et al. (2022) document higher net insider purchases in politically connected firms in China during the month of government subsidy receipt, which indicates that insiders possess an informational advantage concerning forthcoming subsidies and exploit the advantage for personal gains.

more than 5% of shares outstanding every month.[6] Our analysis uses the end-of-year government ownership for each firm. While our study focuses on government equity ownership, other investor types using the same data source are also examined in prior literature (e.g., Choi et al., 2020; Ng et al., 2016). Within Datastream's firm coverage, we can identify 593 firms with non-zero government equity ownership, which we refer to as treatment firms in our setting.[7] We then merge this universe with accounting data from Compustat and obtain the control sample for our treatment firms using the propensity score matching (PSM) approach to tackle sample selection bias.[8] In particular, we pair each state-owned firm with the five nearest non-state-owned counterparts from the same country with propensity scores within a caliper of 0.05.

Finally, we combine the matched sample with the global insider transaction data from 2iQ Research, which covers about 8.1 million share transactions made by over 200,000 directors and officers of public companies across 50 countries. 2iQ Research collects insider transaction information from multiple sources, including stock exchanges, news portals, or company announcements to shareholders following disclosure regulations. For a given insider transaction, the information provided includes the insider's name, his/her position in the company, the transaction type and date, the security involved, the average price and number of shares traded, total transaction value, and the date on which the transaction was reported. Given its international coverage, the database has been used in many contemporary studies (e.g., Anginer et al., 2020; Chowdhury et al., 2018). In our study, we use the company identifier ISIN to link insider trading data to other data sources used in this study. Following previous literature, we consider only open-market insider purchases and sales of common stock in our sample. We exclude transactions of fewer than 100 shares and stocks with daily trading prices of less than $2.

The merging of various databases yields 1243 control firms matched to 366 government-owned firms across 28 countries, as listed in Online Appendix B. The mean difference tests of covariates between the treatment and control firms are presented in Online Appendix C. We do not document significant differences between two subgroups of firms across covariates except for firm size. However, the overall *F*-statistic confirms that the treatment and control firms are not materially different. The treatment and control groups intersect other databases with non-missing values for the main variables used in the baseline analysis, producing a final sample of 85,221 insider transactions for 1609 unique firms from 2003 to 2016.

3.2. *Definitions of Key Variables*

3.2.1. *Measuring government ownership*
For our primary analysis, we employ three alternative measures for the extent of a firm's government equity ownership: (1) *GovtOwnership*, the proportion of a firm's shares held by the government in a given year; (2) *GovtDummy*, an indicator variable which takes the value of one if *GovtOwnership* is positive and zero otherwise; and (3) *GovtControl*, an indicator variable equal to one if the government is a controlling shareholder (i.e., *GovtOwnership* > 50%) and zero otherwise. Panel A of Table 1 displays the summary statistics of government ownership

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[6]Datastream provides information about strategic holdings, which are disclosed holdings exceeding 5% of the total number of shares outstanding. These holdings items include: (i) government shareholdings (NOSHGV); (ii) cross holdings of corporations (NOSHCO); (iii) pension or endowment funds (NOSHPF); (iv) investment banks or institutions (NOSHIC); (v) employees/families or those with substantial positions in a firm (NOSHEM); (vi) foreign investors domiciled in a country other than that of a firm (NOSHFR); and (vii) others, outside the above categories with a disclosed holding over 5% (NOSHOF). We identify the government-owned firms if the data item 'NOSHGV' is non-missing.

[7]Prior literature (e.g., Borisova et al., 2015) also extracts the government ownership information from Thomson Reuters' other product, Thomson One Banker. However, this product was discontinued in 2015.

[8]The propensity score is constructed using a pre-specified list of firm characteristics we control for in our baseline model. These are firm size, book-to-market ratio, share turnover, stock return volatility, and past stock return.

Table 1. Summary statistics.

Panel A: State ownership by year

Year	No. of State-owned Firms	GovtOwnership	Year	No. of State-owned Firms	GovtOwnership
2003	192	0.373	2010	325	0.264
2004	142	0.291	2011	1133	0.206
2005	184	0.322	2012	1494	0.173
2006	254	0.289	2013	1404	0.175
2007	396	0.267	2014	1233	0.183
2008	339	0.264	2015	1376	0.173
2009	357	0.259	2016	1193	0.190
Average (2003–2016)					**0.204**

Panel B: Firm-level variables

	Full Sample			State-owned Firms			Non-State-owned Firms			*p*-values
Variables	Mean (1)	Median (2)	SD (3)	Obs (4)	Mean (5)	SD (7)	Obs (8)	Mean (9)	SD (11)	(5) – (9) (12)
Alpha	0.019	0.017	0.156	10,022	0.030	0.142	75,199	0.018	0.157	0.000
Size	7.445	7.530	2.045	10,022	7.892	2.047	75,199	7.385	2.037	0.000
BTM	0.826	0.645	0.666	10,022	0.890	0.669	75,199	0.818	0.665	0.000
Turnover	0.761	0.475	0.912	10,022	0.651	0.663	75,199	0.777	0.940	0.000
Volatility	0.019	0.017	0.009	10,022	0.018	0.010	75,199	0.019	0.009	0.000
PastReturn	0.057	0.046	0.307	10,022	0.064	.287	75,199	0.057	.308	0.023
BidAsk	1.017	0.502	2.353	10,022	1.319	4.733	75,199	0.976	1.810	0.000
AccQuality	0.447	0.381	0.423	10,022	0.383	0.408	75,199	0.456	0.424	0.000

Table 1 presents descriptive statistics for the variables used in our analyses. Our sample contains 85,221 firm-year observations in 28 countries from 2003 to 2016. All continuous variables are winsorized at the 1% level in both distribution tails. Variable definitions and sources are provided in Appendix A. Panel A reports the number of government-owned firms and the cross-sectional average proportion of corporate equity held by governments in a given year. Panel B presents the descriptive statistics of the variables used in our baseline Equation (1) for our full sample and the two subsamples of government-owned and non-governmental-owned firms.

variables over the years. It could be seen that, though government ownership is decreasing over our sample, the governments still hold a significant proportion of firms' equity at roughly 20% over time. The proportion of shares held by the government for an average firm in our sample is 0.204, comparable to that reported in Ben-Nasr et al. (2012). We have also seen an increasing number of state-owned firms since 2009 after the GFC.

3.2.2. Measuring insider trading profitability

This study follows Jagolinzer et al. (2011) and adopts the insiders' abnormal trading returns (profitability) as our primary insider trading measure. In particular, the insider trading profitability variable, denoted as *Alpha*, is calculated using the risk-adjusted abnormal stock returns from the market model estimated over the 180 trading days following the transaction date. The 180-day window accommodates the 'short-swing' rule requiring corporate insiders to reverse profitable positions within six months.[9] *Alpha* is multiplied by (− 1) for insider sale transactions to capture the losses avoided by insiders in these transactions. Panel B of Table 1 presents the descriptive statistics of *Alpha* in the entire sample and suggests that an average insider in our sample earns an abnormal return of 0.019% per day over 180 days post-transaction.

[9]As part of our robustness tests, we estimate insiders' abnormal trading returns over shorter trading windows and use them as alternative dependent variables.

3.2.3. Control variables

Our baseline analyses incorporate a list of firm-specific characteristics that affect the incentives for insider trading activities in the extant literature. For instance, Lakonishok and Lee (2001) report that insiders trade more profitably in smaller firms. In our specifications, we first control for firm size (*Size*), the natural logarithm of the previous year's market capitalization. We further control for the book-to-market ratio (*BTM*, the ratio of the book value of equity to market capitalization) and past stock returns (*PastReturn*, the market-adjusted stock returns over a window [–240, –1] before the first transaction in a given calendar year) as prior studies suggest that insiders trade as contrarians (Piotroski & Roulstone, 2005). We also use share turnover (*Turnover*) as a proxy for stock market liquidity since informed insiders can frequently trade in liquid stocks.

Finally, building on Frankel and Li (2004) and Bushman et al. (2004), we account for an inherent asymmetric information environment due to the agency problem of government ownership using three additional control variables. The first two variables are the annualized standard deviation of the daily market-adjusted returns (*Volatility*) and the average relative daily bid-ask spread (*BidAsk*) over a 240-trading day period ending one day before the first insider transaction in a given year. The third is an accounting-based measure of earnings quality (*AccQuality*), proxied by the absolute value of discretionary accruals estimated from the cross-sectional McNichols's (2002) model for each industry year. To alleviate the concern that outliers bias our estimation results, we winsorize all continuous variables at the top and bottom 1% of the sample distribution. The descriptive statistics of these control variables are presented in Panel B of Table 1.

Online Appendix D of this study presents the pairwise correlations between the main dependent and independent variables of interest. Most correlation coefficients are significant at a 1% level and well below 0.80, suggesting that our baseline model is unlikely to be subject to multicollinearity problems. Finally, the correlations between *Alpha* and all three proxies for government ownership are positive and statistically significant, providing preliminary evidence of our Hypothesis 1.

4. Government Ownership and Insider Trading

4.1. Baseline Results

To begin with, we compare insider trading profitability between government-owned and non-government-owned companies in a univariate analysis reported in Column (12) of Table 1 Panel B. The mean value of *Alpha* is 0.030% for SOEs and 0.018% for non-SOEs. The *p*-value associated with the mean differences in insider profits of the two subgroups of firms provides initial evidence that insider trading profitability is significantly higher in government-owned than non-government-owned firms, in line with the prediction of our first hypothesis.

We then estimate the following regression specification to investigate how government ownership affects insider trading profitability:

$$
\begin{aligned}
Alpha_{i,s,t} = {} & \alpha_0 + \alpha_1 GovernmentOwnership_{i,t-1} \\
& + \alpha_2 Size_{i,t-1} + \alpha_3 BTM_{i,t-1} + \alpha_4 Turnover_{i,t-1} \\
& + \alpha_5 Volatility_{i,t-1} + \alpha_6 Past\,Return_{i,t-1} + \alpha_7 BidAsk_{i,t-1} \\
& + \alpha_8 AccQuality_{i,t-1} + \lambda_j + \gamma_c + \eta_t + \varepsilon_{i,s,t}
\end{aligned}
\tag{1}
$$

where i, s, j, c, and t index firms, insider transactions, industries, countries, and years, respectively. *Alpha* denotes the insider trading profitability measure, which is the risk-adjusted stock return a corporate insider earns over a 180-day window following the transaction dates. *Government Ownership* alternatively represents our three proxies for the extent of government

Table 2.   Government ownership and insider trading profitability.

Variables	Dependent variable = *Alpha*					
	(1)	(2)	(3)	(4)	(5)	(6)
GovtOwnership	0.054***			0.047***		
	(10.03)			(8.09)		
GovtDummy		0.014***			0.009***	
		(9.13)			(5.55)	
GovtControl			0.025***			0.023***
			(6.67)			(5.92)
Size	− 0.007***	− 0.007***	− 0.007***	− 0.005***	− 0.005***	− 0.005***
	(− 19.21)	(− 18.90)	(− 18.52)	(− 11.94)	(− 11.61)	(− 11.28)
BTM	0.003**	0.003***	0.003***	0.013***	0.013***	0.013***
	(2.37)	(2.64)	(2.61)	(9.46)	(9.61)	(9.52)
Turnover	− 0.005***	− 0.005***	− 0.005***	− 0.005***	− 0.005***	− 0.005***
	(− 6.78)	(− 6.96)	(− 7.03)	(− 4.97)	(− 5.20)	(− 5.09)
Volatility	− 0.030	− 0.021	− 0.021	− 0.443***	− 0.434***	− 0.429***
	(− 0.26)	(− 0.18)	(− 0.18)	(− 3.43)	(− 3.35)	(− 3.32)
PastReturn	0.036***	0.036***	0.036***	0.021***	0.021***	0.021***
	(13.95)	(13.84)	(14.00)	(8.42)	(8.34)	(8.42)
BidAsk	0.011***	0.011***	0.011***	0.008***	0.008***	0.008***
	(17.84)	(17.89)	(17.96)	(20.55)	(20.45)	(20.73)
AccQuality	− 0.010***	− 0.010***	− 0.010***	− 0.020***	− 0.020***	− 0.020***
	(− 6.71)	(− 6.89)	(− 6.93)	(− 7.04)	(− 6.99)	(− 6.99)
Industry FE	No	No	No	Yes	Yes	Yes
Country FE	No	No	No	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes
Adj. R^2	0.038	0.038	0.037	0.078	0.078	0.078
Obs.	85,221	85,221	85,221	85,221	85,221	85,221

This table presents the regression results of insider trading profitability on the extent of government ownership. The dependent variable is *Alpha*, which represents the intercept estimate of the market model in a window [1,180] following the transaction date. *GovtOwnership* is the proportion of a firm's shares held by the government. *GovtDummy* is an indicator variable for firms where state ownership is greater than zero and zero otherwise. *GovtControl* is an indicator variable that takes the value of one if the government is a controlling shareholder (i.e., *GovtOwnership* > 50%) in the firm and zero otherwise. *Size* is the natural logarithm of the market value of equity in the previous fiscal year. *BTM* is the ratio of the book value of equity to market capitalization in the previous fiscal year. *Turnover* is the daily stock turnover, scaled by the number of outstanding shares, in a window [− 240, − 1] before the transaction. *Volatility* is the standard deviation of daily stock returns in a window [–240, –1] before the transaction. *PastReturn* is the market-adjusted stock returns in a window [–240, –1] before the transaction. *BidAsk* denotes the relative bid-ask spread, computed as the absolute value of the daily bid-ask spread divided by the average of the bid and ask prices over a 240-day window ending one day before the first insider transaction each year. *AccQuality* is the absolute value of discretionary accruals (i.e., residuals) from the cross-sectional McNichols's (2002) model estimated at an industry-year level. Regressions in Columns (1)-(3) do not include any types of fixed effects, while those in Columns (4)-(6) include industry, country, and year fixed effects. Standard errors are double clustered at the transaction date-firm level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively. Obs is the number of observations. The sample period is from 2003 to 2016.

ownership, including *GovtOwnership, GovtDummy,* and *GovtControl*. The set of control variables is discussed in Section 3.2.3. Our baseline specification is estimated at the insider transaction level and includes industry (λ_j), country (γ_c), and year-fixed effects (η_t) to account for time variations and unobservable industry- and country-level characteristics. The standard errors are adjusted for heteroskedasticity and clustered at the firm-transaction date level following Jagolinzer et al. (2011).

Table 2 reports the estimation results of our baseline Equation (1). Columns (1) to (3) present the OLS regressions of *Alpha* on *GovtOwnership* and other firm-level covariates without fixed effects, whereas Columns (4) to (6) substantiate these regressions with a full set of country-, industry-, and year-fixed effects. Across all models, the results show that government ownership

is significantly and positively associated with insider trading profitability across all specifications. For instance, the coefficient of *GovtOwnership* is 0.054 (*t*-value = 10.03) in Column (1). It slightly decreases to 0.047 (*t*-value = 8.09) in Column (4) when we control for the fixed effects. Regarding economic significance, this coefficient suggests that corporate insiders earn 22.76% (= (0.047∗0.092)/0.019) more than the average when the extent of government ownership increases by one standard deviation.

In Columns (2) and (5), we use *GovtDummy* as an alternative explanatory variable to address the concern that the presence of government owners, rather than the extent of their ownership, drives insider opportunism. The effect of *GovtDummy* remains significant and positive in the baseline regression model. The coefficient of *GovtDummy* in Column (2) indicates that insiders in government-owned firms earn roughly 0.010% more daily abnormal returns (equivalent to 3.65% annualized abnormal returns) than those in non-government-owned firms. Such profitability difference is sizable, corresponding to approximately 65% of its sample mean value at 0.019%. The estimated regressions in Columns (3) and (6) demonstrate that corporate insiders can earn significantly higher abnormal returns from trading their shares when the government holds a controlling stake in a firm.

The signs of the control variable coefficients are broadly in line with those reported in prior literature (Frankel & Li, 2004; Lakonishok & Lee, 2001). For instance, the estimated coefficients on *Size, Turnover*, *AccQuality*, and *Volatility* are negative and statistically significant, while that of *BidAsk* is positive. These results suggest that insiders can earn higher abnormal trading returns in smaller firms, those exposed to more severe information asymmetry, and those whose stocks are thinly traded.

The primary results in Table 2 align with our first hypothesis that SOE insiders derive monetary benefits from profitable trades of their company stocks using the political information advantage gained through frequent interactions with government shareholders.[10]

4.2. Event Study Analysis

We perform a cleaner event study analysis in a difference-in-difference (DiD) framework to ensure unobservable firm characteristics do not drive our primary results. This approach reexamines the effect of government ownership on insider trading profitability over a shorter event window surrounding the transition from zero to non-zero government ownership in a firm. This setting can also serve as a governance shock to the firm's executive pay plan. As discussed in Section 2, we expect that SOE managers and politicians may engage in quid pro quo arrangements and use profitable insider trades as compensation for the pay cut after the government acquires their companies' equity stakes.

To perform this test, we first track our sample to identify the incidents where firms have no government ownership at year (*t-1*) but non-zero government ownership at year *t* and retain non-zero government ownership at year (*t + 1*) during our sample period. The investigation results in 148 switching events, defined as treatment firms. Then, we match each treatment firm with the five closest control firms that had never experienced a switch in their ownership structure throughout our sample based on the propensity scores estimated using a logit regression of the treatment on control covariates in our baseline regressions. The covariate balance tests reported in Panel A of Table 3 show that the differences in the mean values of observable firm characteristic variables between treatment and control samples are statistically insignificant, confirming the validity of the DiD set-up.

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[10]Given the robustness of our findings across three different measures of government ownership in various model specifications, we only report the results of regression models using *GovtOwnership* as the primary variable of interest in our subsequent analyses.

Table 3. Event study analysis: Insider profits and executive compensation.

Panel A: Covariate balance tests

	Treatment	Control	Difference	*p*-value
Size	7.800	7.745	0.055	0.608
BTM	0.849	0.814	0.035	0.369
Turnover	0.901	0.931	− 0.031	0.626
Volatility	0.020	0.020	0.000	0.670
PastReturn	0.011	0.015	− 0.004	0.390
BidAsk	0.688	0.732	− 0.044	0.503
AccQuality	0.514	0.512	0.002	0.925

Panel B: DiD analyses

	Alpha	Log (Compensation)	Compensation
Variable	(1)	(2)	(3)
Switch × Post	0.017***	− 0.460**	− 0.078*
	(2.98)	(− 2.30)	(− 1.91)
Switch	0.008	2.275**	0.488**
	(1.64)	(2.62)	(2.16)
Post	− 0.001	− 0.015	− 0.019
	(− 0.33)	(− 0.28)	(− 0.72)
Size	− 0.003***	0.687**	0.309**
	(− 3.24)	(2.77)	(2.04)
BTM	0.040***	0.161	− 0.000
	(13.96)	(0.70)	(− 0.00)
Turnover	− 0.001	− 0.132	− 0.047
	(− 0.40)	(− 0.78)	(− 0.68)
Volatility	− 0.651***	13.002	0.824
	(− 2.60)	(1.08)	(0.19)
PastReturn	0.040***	− 0.032	− 0.041
	(7.15)	(− 0.44)	(− 0.63)
BidAsk	0.013***	0.170	0.103*
	(9.92)	(1.33)	(1.66)
AccQuality	− 0.0288***	− 0.049	− 0.178
	(− 4.50)	(− 0.12)	(− 0.63)
Industry FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adj./Pseudo R^2	0.119	0.609	0.349
Obs.	19,430	1656	1104

This table presents the effect of government ownership on insiders' trading profits and their compensation. Panel A presents the mean differences of covariates between treatment and control samples. In Panel B, the dependent variable in Column (1) is *Alpha*, which represents the intercept estimate of the market model in a window [1,180] days following the transaction date. In Columns (2)-(3), we use two alternative compensation measures: the log transformation of total compensation that insiders receive and the absolute value of total compensation. *Switch* is an indicator variable that equals one if a firm moves from a non-government to a government ownership structure in year *t* and retains non-zero government ownership in year *t + 1* (i.e., treatment firm) and 0 for the control firms that remain non-government-owned throughout our sample period. *Post* is a time indicator variable set to 1 for the years after government ownership structure changes (i.e., year *t* and *t + 1*) and 0 for the year (*t-1*). Other control variables are defined in Appendix A. Regression in Column (1) is estimated at the trade level, whereas those in Columns (2) and (3) are estimated at the firm level. Column (3) is estimated using the Poisson pseudo maximum likelihood (PPML) estimator. Across all regressions, the standard errors are double clustered at the transaction date-firm level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively. Obs is the number of observations. The sample period is from 2003 to 2016.

The matching procedure yields an event study sample of 148 treatment and 495 control firms. We retain insider transactions for each firm from one year before to one year after the ownership switching event. As such, the testing sample for our DiD analysis consists of 19,430 insider

transactions. We use this sample to formally test the effect of ownership structure change on insider profits by estimating the following regression model:

$$Alpha_{i,s,t} = \alpha_0 + \alpha_1 Switch_i \times Post_t + \varphi X_{i,t-1} + \lambda_j + \gamma_c + \varepsilon_{i,s,t} \tag{2}$$

where *Switch* is an indicator variable that takes the value of one for treatment firms and zero for control firms; *Post* is an indicator variable that equals one for insider transactions made in and after the switching event year and zero otherwise. *X* denotes the vector of control variables defined in our baseline Equation (1). This model is estimated at the insider transaction level and includes industry (λ_j) and country- (γ_c) fixed effects. The estimation results of Equation (2) are reported in Table 3 Panel B. We observe a positive and statistically significant coefficient on the interaction term of *Switch* × *Post*. This reinforces our findings in Table 2 that insiders earn significantly higher abnormal trading returns as their firm becomes an SOE.

   To test the compensation substitution effect associated with government ownership, we collect the information on executive compensation from the BoardEx database and replace *Alpha* with the natural log of total executive compensation in Equation (2).[11] It is worth noting that the regression models are estimated at a firm-year level to be aligned with the frequency of executive compensation data. The result in Panel B Column (2) shows a negative coefficient on *Switch* × *Post*, meaning that executive pay experiences a significant decline after the government acquires a firm's equity stake. To ascertain that our result is not driven by the bias in the log transformation of count-like variables (Cohn et al., 2022), we also employ a Poisson Pseudo Maximum Likelihood (PPML) estimator using the raw value of executive compensation as the dependent variable in Column (3) and find that our previous result remains unaffected. Combined with the results in Column (1), the collective evidence further supports the political information transfer hypothesis by showing that SOE managers may have incentives to demand political information tips from government officials to offset their monetary losses due to explicit pay cuts.

4.3. Robustness Tests

To ensure the robustness of our findings, we rigorously test our initial results using various approaches. These include changing the data sample, using the alternative model specifications, and employing different metrics for measuring insider trading profitability. The detailed results of these robustness checks are available in Online Appendix E. Importantly, none of our baseline inferences are affected in these tests.

4.4. Endogeneity Tests

Despite the many controls in our analyses, a legitimate concern is that omitted variables could simultaneously affect government investors' propensity to hold a particular firm's stock and insider trading profitability. We adopt three alternative econometric approaches to address this endogeneity concern: (1) entropy balancing matching, (2) Mahalanobis matching, and (3) the instrumental variable (IV) analysis. Details of these tests are presented in Online Appendix F. Overall, our conclusions remain qualitatively unchanged after accounting for endogeneity issues.

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[11]The BoardEx database provides information about the average compensation of executive directors (EDs), supervisory directors (SDs), and the entire board of directors at a firm-year level. We construct our compensation measures using the average compensation of EDs only, as we show later in Table 7 Panel A that the private information of political connections mainly transpires to the business's top executives. In unreported results, our results remain unchanged if we use the average compensation of all board members.

5. Information Content of Insider Trades in Government-owned Firms

This section delves deeper into analyzing the nature of political information transferred from politicians to SOE managers. In particular, we disaggregate the information content of insider trading into idiosyncratic and macroeconomic components. To do so, we use various identification strategies to investigate how macro-, industry-, and firm-specific political information of government ownership is transmitted into the trading process of SOE managers.

5.1. Political Uncertainty, Government Ownership, and Individual Insider Profits

Hypothesis 2 predicts that the political information advantage gleaned from close ties with politicians mitigates the political uncertainty faced by SOE managers and enables them to assess the impact of macro-, industry- and firm-specific government actions on their firms' future performance ahead of other investors. To explore this notion, we seek evidence of superior insider trading profitability in SOEs during various macro- and industry-level circumstances where political uncertainty is most concerning.

5.1.1. Country-specific policy uncertainty

National elections lead to recurring and exogenous changes in political leadership that happen at different times in different countries, engendering heightened uncertainty about future government actions (Julio & Yook, 2012). However, Wellman (2017) suggests that companies with closer ties to politicians could have a higher chance to engage in open dialogues with policymakers about legislative proposals under consideration and understand the factors that comprise their reaction to various alternative policies.[12] In our context, close ties with politicians may help SOE managers understand how the policy uncertainty arising from the change of political leadership during elections affects the future investment and cash flows of their firms, translating into profitable insider trades in SOEs.[13]

To test our prediction, we collect election information from three primary sources, including the Polity IV database from the Center for International Development and Conflict Management at the University of Maryland, the World Bank Database of Political Institutions, and internet resources from www.electionresources.org. We identified 75 national elections occurring in 28 countries between 2003 and 2016. We drop the election if it happens within less than two years from the previous election, as our analysis looks into a two-year window preceding the election date to detect the variation in insider profits before and during politically uncertain periods using the following DiD setting:

$$
\begin{aligned}
Alpha_{i,s,t} = {} & \alpha_0 + \alpha_1 GovtDummy_i \times Politicaluncertaint\,y_t \\
& + \alpha_2 GovtDummy_i + \alpha_3 Politicaluncertaint\,y_t \\
& + \varphi X_{i,t-1} + \lambda_j + \gamma_c + \varepsilon_{i,s,t}
\end{aligned}
\tag{3}
$$

where *GovtDummy* is an indicator variable for government-owned firms. *Political uncertainty* is an indicator variable that takes the value of one in the 12 months preceding the election date and zero for the 24 to 12 months before the election. The definition of uncertain political periods is aligned with the prior literature (Julio & Yook, 2012; Wellman, 2017). *X* is a vector

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[12]As a common practice in the electoral process, politicians and legislators try to get exposure to the public. For instance, these individuals often communicate openly with the country's constituents to discover their policy preferences and the expected outcome of legislative proposals under consideration (Schuler et al., 2002).

[13]Based on our sample, we list some salient insider trades in government-owned firms during the year leading up to national elections in Footnote 3.

of control variables specified in our baseline Equation (1). We present Equation (3) estimation result in Column (1) of Table 4 Panel A. The estimated coefficient of the interaction term *Govt-Dummy × Political uncertainty* is positive and statistically significant at a 1% level, indicating that insiders in SOEs could earn higher abnormal trading profits than those in non-SOEs during politically uncertain periods associated with national elections.

For robustness, we use international political crises as an alternative identification strategy for country-level political uncertainty. We collect information about international political crises from the International Crisis Behavior Project (ICB) database. From 2003 to 2016, we observed 41 crisis episodes involving 40 countries as crisis actors in the database.[14] We drop any crisis occurring within less than two years from the previous one in a given country, similar to the setting of national elections. Merging the crisis events with our baseline dataset retains nine political events related to ten countries in our sample. Online Appendix G presents the list of these events, the involved countries, and each event's start and end dates. We re-estimate Equation (3) for politically uncertain periods emanating from international political crises. In this DiD test, the *Political uncertainty* dummy variable takes the value of one if insider trades are made between the crisis's start and end dates and zero for insider trades made during the year leading to the crisis's start dates. Column (2) of Table 4 Panel A shows a positive and statistically significant coefficient on *GovtDummy × Political uncertainty*, consistent with SOE managers' superior ability to interpret the impact of dynamic government actions on their firms during politically uncertain episodes.

5.1.2. Industry-specific policy uncertainty

We attempt to capture industry-specific political uncertainty using the pervasive adoption of emissions trading systems (ETS) and the public support of financial industries worldwide during the 2008–2009 GFC. ETS is viewed as an effective national policy instrument to stem greenhouse gas emissions. By putting a price on carbon emissions, such a trading system may create considerable policy impact uncertainty for high-emissions firms (Ferrara & Giua, 2022; Segura et al., 2018). To understand whether SOE managers in affected industries have an information edge in interpreting the ETS-induced policy impact, we test the changes in insider trading profits surrounding the adoption of ETS using a Difference-in-Difference-Differences (DDD) setting specified below:[15]

$$
\begin{aligned}
Alpha_{i,s,t} = {} & \alpha_0 + \alpha_1\, GovtDummy_i \times Affected\ Industry_j \times Politicaluncertaint\,y_t \\
& + \alpha_2 GovtDummy_i \times Affectedindustry_j + \alpha_3 GovtDummy_i \\
& + \times Politicaluncertaint\,y_t + \alpha_4 Affectedindustry_j \times Politicaluncertaint\,y_t \\
& + \alpha_5 Affectedindustry_j + \alpha_6 Politicaluncertaint\,y_t + \alpha_7 GovtDummy_i \\
& + \varphi X_{i,t-1} + \lambda_j + \gamma_c + \varepsilon_{i,s,t}
\end{aligned}
\tag{4}
$$

where *Affected industry* is an indicator variable that equals one for firms operating in one of the three *polluting* sectors, including oil and gas, utilities, and basic materials, based on Datastream's

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[14]A country is defined as a crisis actor if (1) its decision-makers perceive a threat from the crisis to basic national values, (2) its leaders believe that they must make a policy decision within a finite period of time, and (3) its national leaders consider the chances of involvement in military hostilities to be heightened (Huang et al., 2015). Some typical political crises include the Iran Nuclear crises in 2003 and 2006, the Libyan civil war in 2011, and the North Korean Nuclear crisis.

[15]We collect each country's ETS implementation information from the International Carbon Action Partnership (ICAP) fact sheets and formal announcements from its government's website. Online Appendix H reports the ETS adoption years of 19 out of 28 countries in our sample.

Table 4. Political uncertainty, government ownership, and insider profits.

Panel A: Country-wide policy uncertainty

	Dependent variable = Alpha	
	National Election	Political crises
Variables	(1)	(2)
GovtDummy × Political uncertainty	0.023***	0.017**
	(4.90)	(2.01)
GovtDummy	0.006*	− 0.007
	(1.76)	(− 1.02)
Political uncertainty	− 0.004**	− 0.013***
	(− 2.05)	(− 4.58)
Industry FE	Yes	Yes
Country FE	Yes	Yes
Other controls	Yes	Yes
Adj. R^2	0.092	0.068
Obs.	32,737	12,639

Panel B: Industry-wide policy uncertainty

	Dependent variable = Alpha	
	ETS adoption	GFC
Variables	(1)	(2)
GovtDummy × Affected Industry × Political uncertainty	0.113***	0.054**
	(4.52)	(2.51)
GovtDummy × Affected Industry	− 0.121***	− 0.003
	(− 7.07)	(− 0.25)
GovtDummy × Political uncertainty	− 0.063***	− 0.043***
	(− 4.09)	(− 3.23)
GovtDummy	0.048***	0.028**
	(4.29)	(2.55)
Affected Industry × Political uncertainty	− 0.032***	− 0.011**
	(− 3.61)	(− 1.97)
Affected Industry	0.010	− 0.052***
	(1.58)	(− 12.54)
Political uncertainty	− 0.019***	− 0.004
	(− 4.13)	(− 1.02)
Country FE	Yes	Yes
Other controls	Yes	Yes
Adj. R^2	0.043	0.085
Obs.	8119	18,262

This table presents the effects of government ownership on insider trading profitability during major changes in political environments. We consider two country-wide events of (1) national elections and (2) international political crises in Panel A, along with two industry-wide events of (3) emissions trading system adoption and (4) the global financial crisis (GFC) in Panel B. The dependent variable is *Alpha*, which represents the intercept (α) of the market model in a window [1,180] following the transaction dates. *GovtDummy* is an indicator variable for firms where state ownership is greater than zero and otherwise zero. In Panel B, *Affected industry* is an indicator variable for firms operating in the polluting or financial sector and zero otherwise. *Political uncertainty* is an indicator variable that takes the value of 1 for the years that a country or industry's political environment is the most uncertain due to a political/regulatory change and zero otherwise. All models include industry, country, and year fixed effects. Standard errors are double-clustered at the transaction date-firm level. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively. Obs is the number of observations. The sample period is from 2003 to 2016.

two-digit industry code and zero for firms operating in other sectors; *Political uncertainty* is an indicator variable that equals one for insider trades made in the adoption year and a year after and zero for the trades in the prior two years. *X* is a vector of control covariates, as specified

in our baseline Equation (1). Results in Column (1) of Table 4 Panel B show that the interaction term, *Affected industry × Political uncertainty,* exhibits a significantly negative coefficient. This suggests that insiders in a firm operating in the polluting sector, on average, earn less from trading their shares, consistent with the heightened uncertainty about their firm performance after the ETS adoption. More importantly, we document a significant positive coefficient of *GovtDummy × Affected industry × Political uncertainty*, indicating that government ownership attenuates the uncertainty associated with the ETS adoption among high-emissions firms.

We also apply a similar DDD setting to the 2008–2009 GFC periods on the premise that the government is likely to stabilize the financial markets and restore market confidence by introducing industry-specific policies to the financial sector (Jagolinzer et al., 2020). In this test, the *Affected industry* variable takes the value of one for financial firms and zero otherwise. *Political uncertainty* assumes the value of one for 2008 and 2009, when financial firms were exposed to heightened policy uncertainty due to stronger oversight by regulators, and zero for 2006 and 2007. Consistent with the ETS findings, we document a significantly positive coefficient of *GovtDummy × Affected industry × Political uncertainty*, suggesting higher insider trading profitability among government-owned financial firms during the GFC.

The overall findings from Table 4 support Hypothesis 2 that superior access to policy decision-makers enables SOE insiders to avert political uncertainty and earn higher abnormal trading profits thanks to a more accurate analysis of the economic impact of undefined government actions on their company stocks.

5.2. Political Uncertainty, Government Ownership, and Aggregate Insider Profits

Besides the idiosyncratic component, Hypothesis 3 postulates that SOE managers' superior access to political information about government actions endows them with an ability to interpret and forecast macroeconomic changes more accurately. This results in a stronger predictive power of aggregate insider trading from SOEs for future stock market returns than non-SOEs. The evidence of heightened insider trading profitability in SOEs during national elections and international political crises hints at the macro-level political information advantage held by SOE managers. The subsequent analysis conducts further tests at the aggregate insider trading level to validate the macroeconomic component of SOE managers' information advantage in the following regression specification:

$$Market\,Return_{j,q+1} = \beta_0 + \beta_1 NPR_{j,q}^G + \beta_2 NPR_{j,q}^{NG} + \Psi'X + \gamma_c + \eta_t + \varepsilon_{j,q+1} \qquad (5)$$

where j and q index countries and quarters, respectively. Equation (5) is estimated at a country-quarter level. The dependent variable is *Market Return$_{j,q+1}$*, which alternatively represents the raw local market index return of one leading quarter (i.e., quarter $q + 1$) and the market index return adjusted for the contemporaneous MSCI world index return (Brochet, 2018). NPR^G (NPR^{NG}) is the ratio of net insider purchases, measured as the difference between the total number of insider purchases and sales in a country during quarter q, scaled by the sum of purchases and sales in SOEs (non-SOEs). The vector X is the list of control variables, including contemporaneous and past country-level market returns (*Market Return$_{j,q}$* and *Market Return$_{j,q-1}$*) and other fundamental attributes, such as the mean values of *Size*, *BTM*, *Turnover*, and *Volatility* computed at a country-quarter level. γ_c and η_t indicate country and year fixed effects.

Table 5 displays the estimation results of Equation (5). In Columns (1)–(2), we estimate the regressions of future market return on *NPR*, which is the number of purchases minus the number of sales in each quarter q, scaled by the total number of transactions. We document positive and statistically significant coefficients of aggregate *NPR*, confirming the predictive power of insider net purchases on stock market performance. In addition, we examine how

Table 5. Macroeconomic uncertainty, government ownership, and insider profits.

| | Dependent variable = Market Return$_{j,q+1}$ | | | |
| | Raw | Market-adjusted | Raw | Market-adjusted |
Variable	(1)	(2)	(3)	(4)
$NPR_{j,q}^A$	0.014**	0.011***		
	(2.06)	(2.68)		
$NPR_{j,q}^G$			0.008*	0.007***
			(1.75)	(3.15)
$NPR_{j,q}^{NG}$			− 0.001	0.001
			(− 0.13)	(0.26)
Market Return$_{q,t}$	− 0.194***	− 0.043**	− 0.201***	− 0.047**
	(− 7.41)	(− 2.29)	(− 7.74)	(− 2.50)
Market Return$_{q,t−1}$	− 0.097**	0.466***	− 0.107***	0.461***
	(− 2.53)	(23.43)	(− 2.80)	(23.48)
Size	0.024**	0.010	0.024**	0.010
	(2.2)	(1.28)	(2.16)	(1.32)
BTM	− 0.003	− 0.001	− 0.003	− 0.000
	(− 0.55)	(− 0.24)	(− 0.44)	(− 0.11)
Turnover	0.001	− 0.001	0.001	− 0.001
	(0.64)	(− 0.92)	(0.80)	(− 0.75)
Volatility	− 0.010	0.003	− 0.008	0.004
	(− 0.17)	(0.06)	(− 0.13)	(0.09)
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj. R^2	0.2859	0.423	0.285	0.424
Obs.	1305	1305	1305	1305

This table reports the regressions of future market returns on the insider net purchasing ratio (NPR). The dependent variable is *Market Return*, the country-level buy-and-hold return compounded over a calendar quarter adjusted by the MSCI world index. $NPR_{j,q}^A$ is calculated as the number of insider purchases minus the number of insider sales transactions, scaled by the sum of purchase and sale transactions from all firms for each country-quarter pair. $NPR_{j,q}^G$ is the net purchase ratio estimated for state-owned firms only for each country-quarter pair. $NPR_{j,q}^{NG}$ is the net purchase ratio among non-state-owned firms for each country-quarter pair. All other control variables are defined in Appendix A. The regressions include country and year fixed effects. Standard deviations are double-clustered at the country-quarter level. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Obs is the number of observations. The sample period is from 2003 to 2016.

government ownership affects the predictability of aggregate insider trades on future market return by classifying the net purchases into those related to government-owned ($NPR_{j,q}^G$) and non-government-owned ($NPR_{j,q}^{NG}$) companies in Columns (3)–(4) of the table. The results show that only the coefficient of $NPR_{j,q}^G$ is statistically significant, and its magnitude is more than twice that of $NPR_{j,q}^{NG}$ regardless of how stock market return is measured. These results indicate that aggregate insider trades of government-owned stocks predict future market returns better than those of non-government-owned stocks.[16]

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[16]To strengthen our identification strategies, we also condition the baseline relation between government ownership and insider profits on the extent of macroeconomic uncertainty across our sample countries. In particular, we define macro-uncertain periods with a new variable, *Macro uncertainty*, which is measured by either the World Uncertainty Index (WUI) from Ahir et al. (2022) or the macroeconomic uncertainty index (MUI) constructed by Jurado et al. (2015). We then interact this variable with *GovtOwnership* and *GovtDummy* and expand our baseline models with these interaction terms in Online Appendix I. The results indicate that insiders in SOEs gain higher abnormal trading profits during quarters when the macroeconomic environment is highly uncertain, indicating that these insiders can better assess macro

6. Additional Analyses

To corroborate our empirical results, we examine whether and how the effect of government ownership on insider trading profitability varies with the heterogeneity in insider trading types, firm characteristics, and country-level institutional environments.

6.1. Effect of Government Ownership Conditional on Trade-Specific Characteristics

Politicians are especially interested in controlling information from state-owned firms, often delaying bad news until after key elections (Piotroski et al., 2015). This raises questions about the nature of insider knowledge in SOEs. To explore this, we repeat our baseline analysis separately for insider sales and purchases. Interestingly, while government ownership benefits both, the gain is significantly larger for insider sales based on the χ^2-statistics reported in Table 6 Panel A. This implies that insiders in SOE firms benefit more from knowing about suppressed negative information.

Next, we examine the effect of government ownership across different levels of insiders. In government-owned firms, top executives are typically bureaucrats appointed by the government. They are generally subject to the media and public spotlight and suffer from pay cuts. Meanwhile, as core decision-makers in the company, they can engage in direct dialogues with government officials. Therefore, these individuals are more likely to trade on their political information advantage and gain higher profits. Analyzing the profitability of trades by different insider levels in Table 6 Panel B, we find significantly higher profits for top executives (classes A & B) but not for non-executive board members or lower-level managers (classes C & D) based on the insider classification in 2iQ Research.[17] The varying results in these subsample analyses suggest that the political information benefits concentrate on top-level trades.

6.2. Effect of Government Ownership Conditional on the Information Environment

Prior studies find that high-quality and timely financial disclosures can help outside investors promptly react and incorporate firm-specific information into stock prices, leaving less leeway for insiders to profit from their private information (Frankel & Li, 2004; Huddart & Ke, 2007). This logic implies that more transparent information environments could limit the political information advantage enjoyed by insiders in SOEs.

To test the moderating effect of information transparency, we employ five proxies for the transparency of a firm's information environment at both the firm- and country levels. They are (1) the number of analysts following the firm (#*Analysts*), (2) analyst forecast errors (*AFErrors*), (3) stock price synchronicity (*Synchronicity*), (4) country-level disclosure requirement index *(Disclosure)*, and (5) a country's accounting standard quality index (*AcctStandards*). Detailed definitions of these information variables are provided in Appendix A. Next, we augment the baseline regression by incorporating each of the five proxies for information transparency and its interaction with *GovtOwnership* and investigate the heterogeneous effects of government ownership on informed insider trading across firms with different levels of transparency. We present the regression results in Table 7. Consistent with our conjecture, the results suggest that the effect of

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changes' impacts on their firm performance and alleviate the macroeconomic uncertainty when trading their company stocks.

[17]Insiders are classified into eight levels, denoted from A to H as follows: (A) top insiders (executive board members, chairperson, and top 5 executives), (B) upper-level management (executive committee and top 20 executives), (C) non-executives and supervisory board members, (D) lower-level executives, (E) legal entities, funds, and trust, (F) outsider (Finland only), (G) family and other relatives, and (H) partner, large shareholder, founder, investor, and family holdings.

Table 6. Government ownership and insider trading conditional on trade-level characteristics.

Panel A: Insider buys versus insider sales

Variable	Insider sales			Insider buys		
	(1)	(2)	(3)	(4)	(5)	(6)
GovtOwnership	0.077***			0.041***		
	(10.70)			(4.71)		
GovtDummy		0.019***			0.010***	
		(7.99)			(4.41)	
GovtControl			0.038***			0.013**
			(8.19)			(2.13)
X^{2-} statistic [(1) – (4)]	10.80***					
X^{2-} statistic [(2) – (5)]	7.93***					
X^{2-} statistic [(3) – (6)]	12.87***					
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.081	0.080	0.080	0.087	0.087	0.087
Obs.	38,011	38,011	38,011	47,210	47,210	47,210

Panel B: Insider trades by top executives versus other insiders

Variable	Top executive insiders			Non-executive & subordinate insiders		
	(1)	(2)	(3)	(4)	(5)	(6)
GovtOwnership	0.062***			0.016		
	(6.37)			(1.44)		
GovtDummy		0.010***			0.002	
		(3.73)			(0.61)	
GovtControl			0.014**			0.010
			(2.23)			(1.25)
X^{2-} statistic [(1) – (4)]	10.10***					
X^{2-} statistic [(2) – (5)]	3.87**					
X^{2-} statistic [(3) – (6)]	0.67					
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R2	0.078	0.077	0.077	0.074	0.074	0.074
Obs.	37,591	37,591	37,591	24,760	24,760	24,760

This table presents the effect of state ownership on insider trading profitability for different subsamples of insider trades. We split our sample into insider buys and sales subgroups in Panel A. On the other hand, Panel B divides the sample into subgroups of trades made by top executive insiders versus those of non-executive and subordinate insiders. The dependent variable is *Alpha*, which represents the intercept (α) of the market model in a window [1,180] following the transaction dates. *GovtOwnership* is the proportion of a firm's shares held by the government. *GovtDummy* is an indicator variable for firms where state ownership is greater than zero and otherwise zero. *GovtControl* is an indicator variable that takes the value of one if the government is a controlling shareholder (i.e., *GovtOwnership* > 50%) in the firm and zero otherwise. Columns (1) to (3) are the regression results for the subsample of trades made by insiders who hold top positions in the executive teams of their firms. Columns (4) to (6) are the estimation results for subordinate executive insiders. Other control variables are defined in Appendix A. All models include industry, country, and year fixed effects. Standard errors are clustered by transaction date and firm. *, ** and *** indicate statistical significance at the 10%, 5% and 1% level, respectively. The sample period is from 2003 to 2016.

government ownership on insider trading profitability weakens in firms followed by more financial analysts, with lower analyst forecast errors and higher stock price synchronicity. Similar results are documented in those countries subject to more stringent disclosure regulations and high-quality accounting standards.

Table 7. Government ownership and insider trading conditional on the corporate information environment.

| Variables | Dependent Variable = *Alpha* | | | | |
	(1)	(2)	(3)	(4)	(5)
GovtOwnership	0.106***	0.042***	0.038***	0.143***	0.293***
	(6.52)	(6.74)	(5.78)	(8.56)	(6.61)
GovtOwnership × #Analysts	− 0.026***				
	(− 4.23)				
#Analysts	− 0.005***				
	(− 6.11)				
GovtOwnership × AFErrors		0.493*			
		(1.66)			
AFErrors		0.075***			
		(3.58)			
GovtOwnership × Synchronicity			− 0.007**		
			(− 2.07)		
Synchronicity			0.000		
			(0.70)		
GovtOwnership × Disclosure				− 0.146***	
				(− 6.76)	
Disclosure				0.001	
				(0.06)	
GovtOwnership × AcctStandards					− 0.004***
					(− 5.97)
AcctStandards					− 0.000
					(− 0.06)
Size	− 0.003***	− 0.007***	− 0.005***	− 0.005***	− 0.005***
	(− 5.01)	(− 13.31)	(− 10.97)	(− 11.44)	(− 10.84)
BTM	0.012***	− 0.008***	0.013***	0.013***	0.013***
	(9.16)	(− 4.39)	(9.42)	(9.26)	(9.53)
Turnover	− 0.004***	− 0.002*	− 0.005***	− 0.005***	− 0.005***
	(− 4.34)	(− 1.92)	(− 5.01)	(− 4.91)	(− 5.50)
Volatility	− 0.445***	− 0.458***	− 0.436***	− 0.453***	− 0.363***
	(− 3.44)	(− 2.68)	(− 3.35)	(− 3.45)	(− 2.75)
PastReturn	0.020***	0.016***	0.021***	0.019***	0.020***
	(8.00)	(5.18)	(8.49)	(7.57)	(7.76)

(Continued)

Table 7. Continued.

Variables	(1)	(2)	(3)	(4)	(5)
	Dependent Variable $=$ *Alpha*				
BidAsk	0.008***	0.005***	0.008***	0.008***	0.008***
	(20.33)	(9.11)	(20.45)	(20.68)	(20.31)
AccQuality	-0.021***	-0.023***	-0.020***	-0.022***	-0.022***
	(-7.23)	(-4.97)	(-6.95)	(-7.68)	(-7.74)
Industry FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.079	0.059	0.078	0.079	0.079
Obs.	85,221	60,488	85,204	82,372	81,669

This table shows the effect of government ownership on insider trading profitability, conditional on the corporate information environment. The dependent variable is *Alpha*, which represents the intercept (α) of the market model in a window [1,180] following the transaction dates. *GovtOwnership* is the proportion of a firm's shares held by the government. The information environment is measured as follows. *#Analysts* is the natural logarithm of the number of analysts following a firm in a given year. *AFErrors* is the analyst forecast error measured as actual minus the mean of forecasted earnings per share, scaled by the closing price at the previous year-end. *Synchronicity* is the natural logarithm of the ratio of $(1 - R^2)/R^2$, where R^2 is the coefficient of determination from the market model estimated using the daily stock returns over a given year. *Disclosure* is the country-level disclosure requirement index from Hail and Leuz (2006). *AcctStandards* is the accounting standard quality index from La Porta et al. (1998). Other control variables are defined in Appendix A. All models include industry, country, and year fixed effects. Standard errors are clustered by transaction date and firm. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Obs is the number of observations. The sample period is from 2003 to 2016.

6.3. *Effect of Government Ownership Conditional on Firms' Political Exposure*

Prior research suggests that firms exposed to a higher political risk are often extensively regulated and experience higher stock return volatility during political events (Boutchkova et al., 2012). Hence, one may expect that the political information advantage may be more salient for insiders in politically sensitive firms owned by the governments. We test this conjecture in politically sensitive firms, defined by their operating industry following Julio and Yook (2012) or local-market focus (e.g., all-sales-domestic firms).[18] Consistent with our prediction, the results in Online Appendix J reveal a significantly stronger positive effect of government ownership on informed insider trading in purely domestic firms than in multinational firms.

6.4. *Effect of Government Ownership Conditional on Legal Institutions*

The public sector economics highlight the importance of strong institutions in curbing government rent-seeking behaviors like corruption and resource mismanagement (Djankov et al., 2008; La Porta et al., 1999). Therefore, one can expect that, in countries with weak legal frameworks and ineffective anti-corruption controls, SOE insiders are more likely to leverage their direct contacts with government officials to acquire private political information. Building on this notion, we investigate whether government ownership's impact on insider trading is amplified in countries with lax legal systems and corruption issues. We use five proxies for a country's institutional quality, including the strength of shareholder protection (*Shareholder rights*), legal origin (*Common law*), country-level governance score (*Governance*), and the extent of the control of corruption (*Control of Corruption*). The first three measures capture a country's investor protection against insider opportunism, while the last measure reflects the country's commitment to tackling corruption or government expropriation (La Porta et al., 1999).

Results in Columns (1)-(3) of Online Appendix K show that the interaction terms between government ownership and three legal environment proxies are significantly negative at the 1% level. This evidence is consistent with the notion that stronger legal protections dampen the political information advantage government ownership gives to insiders. We also find in Column (4) that a country's robust anti-corruption measures weaken the private benefits of SOE insiders' access to political information.

7. Conclusion

Using a comprehensive sample of 85,221 insider transactions in 1609 unique firms from 2003 to 2016, we find that, in the context of agency problems of state-owned firms, insiders trade not solely on private *firm-specific* information but also their *political* information advantage gained through close ties with government officials. Further analyses reveal the specific nature of SOE insiders' political information advantage. We find evidence of the idiosyncratic component of the political information advantage wherein SOE insiders are better at evaluating the impact of country- and industry-level government actions on their firms. Moreover, SOE insider trades collectively hold more clues about future market movements than those in non-state-owned firms.

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[18]Julio and Yook (2012) classify the following industries as politically sensitive: tobacco products, health care services, pharmaceuticals, defense, petroleum and natural gas, telecommunication, and transportation industries.; We retrieve the firm-level geographical sales distribution from the FactSet Revere database, which allows us to observe the ratio of foreign sales to total sales. FactSet Revere gathers supply chain data from diverse sources like filings, conferences, and news. They categorize relationships into 4 types (customer, supplier, etc.) and 13 sub-types, offering data on about 20,000 links and 5,500–8,000 firms annually. Using this database, we define politically sensitive firms as those earning sales entirely from their local markets (i.e., foreign-sales-to-total-sales = 0).

This finding suggests improved abilities of insiders in state-owned companies to gather, decipher, and use market-wide information to predict macroeconomic changes. Finally, our study emphasizes how strong institutions can help balance the disproportionate information distribution in favor of SOE insiders. Overall, our study contributes to the ongoing debate about the value relevance of government ownership by revealing the unique political edge of entrenched corporate insiders in SOEs worldwide.

Our findings have important policy implications. The exchange of private political information between government officials and market participants remains under-regulated largely due to its conflicting information effects. While such communication allows politicians to receive public feedback and perform informed policymaking, it also creates unequal access to political information.[19] Our evidence highlights the risks of neglecting oversight of the dissemination of private political information. We call for greater transparency in the use of political information for financial gains, which levels the playing field for all market participants and bolsters market confidence in governmental institutions and their investments.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Supplemental Data and Research Materials

Supplemental data for this article can be accessed online at https://doi.org/10.1080/09638180.2024.2328143.
Appendix A. Anecdotal Evidence
Appendix B. Insider trading and government ownership across countries
Appendix C. Comparison of covariates under PSM
Appendix D. Correlation matrix
Appendix E. Summary of robustness tests
Appendix F. Endogeneity tests
Appendix G. Political crises between 2003 and 2016 in our sample
Appendix H. ETS adoption year
Appendix I. The effect of government ownership conditioning on macroeconomic uncertainty
Appendix J. Government ownership and insider trading conditional on firm-level political exposure
Appendix K. Government ownership and insider trading conditional on legal institutions

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[19]For example, in the US, the Political Intelligence Transparency Act requires the disclosure of any communication of private political information by politicians and market participants including business leaders and institutional investors. This Act was proposed several times for the period from 2014 to 2018 (H.R.5525, 113th Congress; S.2738, 114th Congress; H.R.4809, 114th Congress; H.R.2819, 115th Congress) but never enacted.

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Appendix A. Variable Definition.

Variable name	Definition	Data Source
Insider Trading Measures		
Alpha	The risk-adjusted abnormal stock return from the market model estimated over the 180-day window following the transaction date. For sale transactions, this variable is multiplied by (−1).	2iQ Research & Datastream
Alpha30	The risk-adjusted abnormal stock return from the market model estimated over the 30-day window following the transaction date. For sale transactions, this variable is multiplied by (−1).	2iQ Research & Datastream
Alpha60	The risk-adjusted abnormal stock returns from the market model estimated over the 60-day window following the transaction date. For sale transactions, this variable is multiplied by (−1).	2iQ Research &Datastream
$NPR_{j,q}^A$	The number of insider purchases minus the number of insider sales, scaled by the sum of purchases and sales across all sample firms in each country-quarter.	2iQ Research
$NPR_{j,q}^G$	The net purchase ratio of insiders in state-owned firms.	2iQ Research
$NPR_{j,q}^{NG}$	The net purchase ratio of insiders in non-state-owned firms.	2iQ Research
Government Ownership Measures		
GovtOwnership	The proportion of a firm's shares held by the government	Datastream.
GovtDummy	A dummy variable equals one for state-owned firms and zero otherwise.	Datastream.
GovtControl	A dummy variable equals one if the government holds more than 50% of a firm's equity and zero otherwise.	Datastream.
Firm-level Control Variables		
Size	The natural log of the market value of equity at the previous year-end.	Worldscope
BTM	The book-to-market value of equity at the previous year-end.	Worldscope
Turnover	The average daily number of shares traded, scaled by the number of shares outstanding, over a 240-day window ending one day before the first insider transaction each year.	Worldscope
Volatility	The standard deviation of daily stock returns over a 240-day window ending one day before the first insider transaction each year.	Worldscope
PastReturn	The cumulative market-adjusted stock return over a 240-day window ending one day before the first insider transaction each year.	Worldscope
BidAsk	The relative bid-ask spread, computed as the absolute value of the average ratio (bid-ask)/[(bid + ask)/2], over a 240-day window ending one day before the first insider transaction each year	Datastream

(Continued).

Variable name	Definition	Data Source
AccQuality	The absolute value of discretionary accruals (i.e., residuals) from the cross-sectional McNichols's (2002) model estimated at an industry-year level as below: $$ACCL_{i,t,j} = \alpha + \beta_1\, OCF_{i,t-1,j} + \beta_2\, OCF_{i,t,j}$$ $$+\beta_3\, OCF_{i,t+1,j} + \beta_4\Delta Rev_{i,t,j}$$ $$+\beta_5\, PPE_{i,t,j} + \varepsilon_{i,t,j}$$ where $ACCL_t$ = total accruals at year t and are calculated as the difference between net income and operating cash flows, scaled by the total asset at year $t-1$; OCF_t denotes operating cash flow in year t; ΔRev_t is change in revenue between year $t-1$ and year t; PPE_t stands for properties, plant, and equipment at year t, all variables are scaled by total assets at year $t-1$.	Worldscope
Market Return Proxies		
Market return	The buy-and-hold return of a country's Datastream market index compounded over a calendar quarter. The return is also adjusted for the MSCI World Index for robustness.	Datastream
Political information content proxies		
Political uncertainty	An indicator variable for years in which a country or an industry is subject to the highest macroeconomic uncertainty due to country-wide political events, such as (1) national elections and (2) political crises, or industry-specific regulatory changes, such as (3) the adoption of emission trading scheme and (4) the global financial crisis	Polity IV & Election Resources from www.electionresources.org The International Crisis Behaviour Project (ICB) database ETS adoption years from Bai and Ru (2022)
Affected industry	An indicator variable that equals one for polluting or financial firms and zero otherwise. We define polluting firms as those operating in one of the following industries: oil and gas (07), utilities (10), and basic materials (01) based on Datastream two-digit industry codes.	Datastream
Information Transparency Proxies		
#Analysts	The natural logarithm of one plus the number of financial analysts following a firm each year.	I/B/E/S
AFErrors	The absolute value of actual minus the mean forecast value of earnings per share, scaled by the previous year's closing price.	I/B/E/S
Synchronicity	The natural logarithm of $R^2/(1-R^2)$, where R^2 is estimated from the market model based on daily stock returns.	Worldscope
Disclosure	A country's disclosure requirement index reflects disclosure rules at the country's largest stock market.	Hail and Leuz (2006)

Variable name	Definition	Data Source
AcctStandards	A numerical rating of a country's accounting standards, where a higher value indicates better accounting practices.	La Porta et al. (1998).
Variables included in the Online Appendix		
Collectivism	100 minus the value of Hofstede's (2001) individualism index.	Hofstede (2001).
Board independence	The number of independent directors on the board each year.	Refinitiv's ASSET4
Board size	The number of board members each year.	Refinitiv's ASSET4
CEO duality	A dummy variable that equals one if a firm's CEO concurrently holds the position of board chairperson and zero otherwise.	Refinitiv's ASSET4
GDPG	A country's gross domestic product growth rate each year.	World Bank
GDP per capita	The natural logarithm of GDP per capita each year.	World Bank
MV/GDP	Stock market capitalization scaled by GDP each year.	World Bank
Macro uncertainty	This variable is alternatively measured by the World Uncertainty Index (WUI) from Ahir et al. (2022) and the macroeconomic uncertainty index (MUI) from Jurado et al. (2015).	Ahir et al. (2022) Jurado et al. (2015)
Sensitive industry	An indicator variable for firms operating politically sensitive industries include tobacco, healthcare, oil and gas, defense, telecommunications, and transportation based on Datastream's two-digit industry code.	Datastream
Domestic firm	An indicator variable for firms that earn their revenues/sales completely from their local market and have no geographical exposure to other countries.	Factset Revere
Shareholder rights	A country's revised anti-director right index.	Djankov et al. (2008).
Common law	A dummy variable equals one if a country has a common-law origin and zero otherwise.	La Porta et al. (1998).
Governance	The sum of the quartile ranks of Anti-Self-Dealing Index, Insider Trading Restriction and Blackout Period, and Class Action.	Brochet (2018).
Control of Corruption	A measure for perceptions of the extent to which public power is exercised for private gain and 'capture' of the state by elites and private interests.	World Bank