Economic impact of political barriers to cross-border acquisitions: An empirical study of CNOOC's unsuccessful takeover of Unocal ☆

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ABSTRACT

In 2005, the US Congress challenged the acquisition by CNOOC (a Chinese state-owned enterprise) of Unocal (a US firm). This challenge creates a political barrier for foreign companies to acquire US oil companies. This paper examines the stock price reaction of US oil companies to this political opposition. Using an event study methodology, we find that this political barrier resulted in a substantial decline in the market value of US oil companies. For a period of 44 days, during which six anti-CNOOC-takeover political events occurred, the cumulative decline in the market value of a portfolio of 13 US oil refining firms was $47.5 billion and that of a portfolio of 66 US oil and gas exploration firms was $11.4 billion. This study is the first to analyze and quantify the stock price reaction of US non-merging firms to political barriers to cross-border acquisitions. It also has a policy implication regarding the recent enactment of the Foreign Investment and National Security Act of 2007.

1. Introduction

Cross-border mergers and acquisitions (M&A) of US firms have garnered substantial momentum over the last two decades. According to the World Investment Report 2008 published by The United Nations Conference on Trade and Development, the value of such activities had surged from $49.8 billion in 1987 to $379 billion in 2007. However, some recent attempts of foreign companies to acquire US firms have incited formidable political opposition. Notable examples include Dubai's Ports World's bid to manage five US ports in 2006 and CNOOC's offer to acquire Unocal in 2005.

Moreover, the US government's scrutiny of cross-border M&A has been tightened lately. Specifically, the Foreign Investment and National Security Act of 2007 (FINSA) was enacted by the US Congress and became effective on October 24, 2007. FINSA demands a more rigorous review on foreign investment in US companies, including cross-border M&A. The scrutiny is particularly heightened for investment in certain sensitive sectors, e.g., energy industry and industries involving critical infrastructure and technologies. Heightened scrutiny is also required for transactions involving an entity that is controlled by a foreign government.

As a case in point, although France is a member of the North Atlantic Treaty Organization and should not pose military threats to the US, Alcatel's (a French telecom company) acquisition of Lucent (a US telecom company) in 2006 was approved only with an exceptional stipulation—the US government could rescind the transaction in the future, should the combined entity ever breach security commitments made to the US government ('A Higher Bar for Foreign Buyers', *Wall Street Journal*, January 5, 2007).

We contend that political opposition to cross-border M&A can impact negatively on the market value of domestic firms in two aspects. First, political barriers against foreign acquiring companies may lower the takeover probability, thus reducing the expected takeover premiums of domestic target firms. Extant studies (e.g., Eun et al., 1996; Harris and Ravenscraft, 1991) indicate that the share prices of target firms react favorably to announcements of cross-border M&A plans. Obviously, creating obstacles for foreign acquirers can shrink the pool of potential bidders for domestic target firms. Given an efficient capital market, the share prices of domestic firms may weaken, reflecting a lower probability of being cross-border M&A targets.

Second, such barriers may deny potential gains derived from cross-border M&A. Marr et al. (1993) have provided evidence suggesting that foreign bidders can enhance competition in the market for corporate control, while Eun et al. (1996) have shown that cross-border takeovers may generate synergistic benefits by virtue of an increase in the combined shareholder wealth of the acquirer and the acquired.

Hitherto, no research has examined and quantified the impact of political opposition to cross-border M&A on the economic value of domestic firms despite the importance of this issue. As such, this paper is groundbreaking with an event study of CNOOC's unsuccessful takeover of Unocal. We intend to contribute to the debate on cross-border takeover policy by providing the first quantitative study of the impact of a cross-border M&A attempt that is thwarted primarily by political opposition.

We choose to study the CNOOC case for three reasons. First, this case is deemed a milestone because the US Congress has set a precedent that may discourage future cross-border M&A in the oil industries and possibly other critical infrastructure industries. Consistent with this claim, it appears that FINSA is in part a response to the public outcry over CNOOC's attempted takeover of Unocal in 2005. Second, we choose the oil and gas industry because political barriers vary significantly across industries. Such barriers are particularly high in energy sector but low in sectors not involving critical infrastructure. LaRussa et al. (2008) indicate that the US Congress was particularly concerned with foreign investment in the energy sector. As a case in point, the US Congress did not oppose Haier (a Chinese stated-owned appliance-manufacturing company) from attempting to acquire Maytag (its US counterpart) during the same time when CNOOC attempted to acquire Unocal. Third, the rivalry between CNOOC and Chevron to woo the shareholders of Unocal was widely covered by the media and hence the events can readily be identified and chronicled.

To quantify the impact of the CNOOC case, we examine the share price reaction of numerous US oil companies to the events pertaining to a political challenge against CNOOC's proposal to acquire Unocal (hereinafter referred to as 'anti-CNOOC-takeover events'). Our sample firms comprise companies in the US oil refining and oil and gas exploration industries. Using an event study methodology, we discover that the share prices of these firms suffered a significant setback in the wake of six anti-CNOOC-takeover events. While an equal-weighted portfolio of 13 US oil refining companies (excluding Chevron) showed an average decline of nearly $7.9 billion in its market value per event, another equal-weighted portfolio of 66 US oil and gas exploration companies (excluding Unocal) registered a decline of some $1.9 billion on average per event. In sum, these two portfolios lost a total of nearly $59 billion in their market values, which exceeded the gross domestic product of Kuwait in 2005!

The rest of this paper is organized as follows. In Section 2, we provide some background information about CNOOC, while a timeline of CNOOC's attempted takeover of Unocal and the associated political opposition are given in Section 3. Section 4 describes our sample and data, and Section 5 the methodology of our study. We discuss the empirical results and robustness tests in Sections 6 and 7, respectively. Our conclusion is set out in Section 8, with some remarks on future research directions.

2. Institutional details of CNOOC

The China National Offshore Oil Corporation Limited (referred to as 'CNOOC' throughout this paper) is an independent oil and gas exploration company operating primarily offshore from China and Indonesia. The company was incorporated in Hong Kong in 1999 and its shares are publicly traded on the New York Stock Exchange and the Hong Kong Stock Exchange. Nevertheless, CNOOC is often considered as a de facto Chinese state-owned enterprise because approximately 70% of its total outstanding shares are in the hands of the China National Offshore Oil Corporation, which is wholly owned by the People's Republic of China.

China's demand for energy has been growing rapidly due to its brisk economic growth. In 2003, China surpassed Japan to become the second largest consumer of petroleum in the world, behind the US. The International Energy Agency (2005) reported that the oil consumption of China increased by 15% in 2004, breaching 6 million barrels a day. However, China's domestic energy reserves are limited. Its oil and gas reserves account for about 1% of the world's total, compared with the US controlling roundly 2% and 3% of the world's oil and gas reserves, respectively ('Worldwide Look at Reserves and Production' *Oil and Gas Journal*, December 20, 2004). Coupled with a sustained increase in demand, such meager reserves have rendered China a net importer of oil since 1993, while the demand–supply imbalance is expected to worsen ahead. The International Energy Agency (2004) estimates that by 2030, the daily shortfalls in the oil and gas supply in China will amount to 11 million barrels and 47 billion cubic meters, respectively. Thus, it is understandable that Chinese oil companies are anxious to secure energy reserves worldwide.

Being one of the flagship oil companies in China, CNOOC has been actively acquiring energy assets in foreign countries such as Australia, Canada, Indonesia, Kazakhstan, Morocco, Myanmar and Nigeria (The major acquisitions made by CNOOC during 2002–2006 are set out in Appendix A). While these acquisitions are small in size, they indicate that CNOOC's interest in acquiring Unocal is in line with its expansion strategy.

3. Timeline of CNOOC's attempted takeover of Unocal and the associated political opposition

Table 1 summarizes the timeline of CNOOC's attempted takeover of Unocal and the associated political opposition. CNOOC was the first company to express an interest in acquiring Unocal, while private talks between the two companies commenced as early as December 2004. On January 6, 2005, the Financial Times unveiled that CNOOC was considering offering approximately $13 billion to acquire Unocal. Had this transaction been completed, it would have represented the most significant and sizable cross-border acquisition made by a Chinese company.

Afterwards, Chevron (a US oil company) and ENI (an Italian oil company) also expressed their interests in taking over Unocal on January 6 and January 12, respectively, resulting in a bidding war in the ensuing months. On March 30 the Unocal board rejected ENI's offer because it was inferior to those of its rivalries. Although CNOOC was the leading bidder and its management team was interested in acquiring Unocal, the company did not make a formal offer to Unocal as its independent

Table 1
Deal timeline.

Date	Event
Dec-2004	The CEO of CNOOC approached the CEO of Unocal expressing CNOOC's potential interest to acquire Unocal. Executives of the two companies discussed this matter secretly and generally during the following weeks.
6-Jan-2005	The Financial Times published a report indicating that CNOOC was considering a bid of more than $13 billion for Unocal. That same day, the CEO of Chevron contacted Unocal to inquire the possibility of enter a 'strategic transaction' with Unocal. The CEO of Unocal indicated that Unocal was not soliciting a sale.
12-Jan	A senior executive of Italy's ENI SPA (hereinafter referred to as ENI) contacted the CEO of Unocal and expressed its company interest to acquire Unocal if Unocal were to consider entertaining takeover offers from other companies.
26-Feb	Chevron made an all-stock offer to Unocal with an exchange ratio of 0.94 share of Chevron common stock per share of Unocal common stock.
30-Mar	ENI orally made a conditional cash offer of $58/share. The Unocal board rejected ENI's offer, requested CNOOC to submit a definitive offer by April 2, and told the CEO of Unocal to keep talking with Chevron and seek a partial cash deal.
2-Apr	CNOOC told Unocal it was not prepared to make an offer yet, but would consider future discussions. Chevron board authorized a cash-and-stock deal at approximately $65/share.
3-Apr	Unocal board accepted Chevron offer.
1-Jun	CNOOC contacted Unocal and expressed its intention to present an offer to Unocal in the next few days. That same day, Unocal notified Chevron about CNOOC's potential bid.
8-Jun	CNOOC said it was considering a potential bid for Unocal in a statement filed with the Hong Kong Stock Exchange the day before. The news was widely reported by US-based media on June 8.
10-Jun	Federal Trade Commission accepted Chevron's acquisition of Unocal, pending public comment.
20-Jun	Two US Congressmen, Duncan Hunter and Richard Pombo, were calling on the Bush administration to review—and potentially block—CNOOC's attempt to take over Unocal.
22-Jun	CNOOC made an unsolicited $18.5 billion cash bid for Unocal, offering $67 a share. In addition, CNOOC would have to pay a $500 million breakup fee to Chevron while assuming $1.6 billion of Unocal debt. The news was publicly reported on June 23, the day after.
23-Jun	Chevron granted Unocal a waiver to discuss the offer with CNOOC. Negotiations began.
27-Jun	An open letter questioning CNOOC's attempt to takeover Unocal, signed by 41 members of Congress, was already circulating.
28-Jun	The White House said the US would review CNOOC's proposed takeover of Unocal only if its bid was accepted. On the same day, some members of Congress and CNOOC suggested that CFIUS could stage a review even before CNOOC's bid was accepted by Unocal.
30-Jun	In the evening of the same day, the House of Representatives first voted by 333 to 92 to bar the Treasury from using any of its funds to 'recommend approval' of the sale to CNOOC (HR 344). A second and nonbinding resolution, adopted by 398 to 15, expressed concern that the sale 'would threaten to impair' US national security (H Amendment 431).
1-Jul	CNOOC filed a voluntary notice of foreign acquisitions with the CFIUS.
13-Jul	CFIUS declined to review the potential CNOOC–Unocal deal and told CNOOC that a review would only commence after a definitive merger agreement had been reached.
14-Jul	Unocal told CNOOC that the Unocal board might accept CNOOC's offer if it put forward a price high enough to compensate for 'additional risks'. On the same day, a Wall Street Journal and NBC News poll found that 73% of the respondents opposed CNOOC's attempted takeover of Unocal.
19-Jul	Chevron and Unocal jointly announced an amended merger agreement. The revised transaction was structured as 40% cash and 60% stock, providing an overall value of $63.01 per share of Unocal common stock based on the closing price of Chevron stock on July 19, 2005. Unocal stockholders could choose to receive, for each share of Unocal stock, either $69 in cash, 1.03 shares of Chevron stock, or a combination of $27.60 in cash and 0.618 of a share of Chevron common stock, with the all-cash and all-stock elections subject to pro-ration.
20-Jul	Senator Charles Schumer of New York introduced an amendment to the Foreign Operations Appropriations bill (HR 3057), which the Senate passed by voice vote. The amendment would delay the US government from approving any acquisition by a foreign government-owned entity of a US company for 30 days. The amendment requires the Secretary of State to deliver an assessment as to whether there were reciprocal laws allowing for similar transactions in that foreign country.
27-Jul	The US Congress added wording to the Energy Policy Act of 2005 (HR 6) that would delay the closing of CNOOC's attempted takeover of Unocal for 120 days.
2-Aug	CNOOC withdrew its bid for Unocal, citing 'unprecedented political opposition', even though CNOOC could have raised its bid for Unocal, should CFIUS approved the CNOOC–Unocal takeover deal.
10-Aug	Unocal shareholders approved the merger proposal with Chevron.

This table summarizes the timeline covering CNOOC's attempted takeover of Unocal. Events before June 22, 2005 are derived mostly from the 'Background of the Merger' section of the proxy statement of Unocal in 2005. Events at later dates are derived from various newspapers such as the Wall Street Journal, Financial Times, and New York Times.

directors were concerned about the financial risks and political complications related to the merger ('Fuel-Hungry CNOOC May Set Unocal Bid', *Wall Street Journal*, June 22, 2005).[1]

In the absence of a formal offer from CNOOC, the Unocal board accepted Chevron's bid on April 3. Chevron offered Unocal's shareholders a combination of stock and cash valued at approximately $16.5 billion in total. However, CNOOC's desire to acquire Unocal was apparently not extinguished. Around two months after the Unocal board had accepted Chevron's offer, CNOOC announced on June 7 that it was considering making a bid for Unocal by filing a formal statement with the Hong Kong Stock Exchange. This announcement was widely covered by the US media the following day. Two weeks later on June 22, CNOOC further announced that it would offer $67 per share in cash for the shareholders of Unocal, valuing the company at approximately $18.5 billion. This unsolicited bid was again well publicized the next day.

Contrary to the free cash flow hypothesis advanced by Jensen (1986), CNOOC's interest in acquiring Unocal should not have been motivated by a stockpile of excess cash. In the fiscal year ended 2003, CNOOC had $1.13 billion in free cash flow, translating to a mere 6.11% of its offer price for Unocal.[2] To finance the acquisition, the company would have to borrow about $16 billion. Two Chinese state-owned enterprises (i.e. the Industrial and Commercial Bank of China and the China National Offshore Oil Corporation) would provide loans totaling $13 billion while the remaining $3 billion would be financed by two US investment banks (i.e. Goldman Sachs and JP Morgan) ('CNOOC Bid Raise Stakes in the Takeover of Unocal', *Oil and Gas Journal*, June 27, 2005).

Meanwhile, industry experts anticipated that CNOOC would encounter tough political opposition for three major reasons. For one thing, CNOOC was ultimately controlled by the Chinese government, a regime that was considered to be possibly posing threats to US national security. In addition, some people considered that CNOOC had an 'unfair' funding advantage over its rival because it was subsidized indirectly by the Chinese government. Specifically, the CNOOC acquisition was financed mainly by Chinese state-owned enterprises at a below-market interest rate. For example, the weighted average cost of debt for the loans provided by its parent company was 2.25%, which was substantially lower than the 7% charged by the two US investment banks.[3] Last but not the least, the merger of CNOOC and Unocal might have negative implications for vital energy supplies to the US.

The above reasons were deployed by some politicians to oppose CNOOC's bid for Unocal. On June 20, 2 days before the announcement of this bid, two US Congressmen made a pre-emptive move and called for the Bush administration to review and potentially block CNOOC's proposed acquisition ('US Lawmakers Urge Review if CNOOC Makes Bid for Unocal', *Wall Street Journal*, June 20, 2005). In addition to national security concern, these two Congressmen argued that CNOOC's offer was unfair because it had access to financing at a below-market interest rate.

Subsequently, the anti-CNOOC takeover sentiment gathered momentum in the US Congress. On June 27, 5 days after CNOOC had made its offer to Unocal, an open letter signed by 41 US Congressmen was circulating with a view to questioning the CNOOC–Unocal deal ('CNOOC's Unocal Bid Sheds Light on Revised Strategy', *Asian Wall Street Journal*, June 27, 2005). In the evening of June 30, the US House of Representatives passed a non-binding resolution (HR 344) by a vote of 398 to 15, expressing its concern that the CNOOC–Unocal deal could threaten US national security ('In Order to Get Unocal, Timing May be the Key', *Wall Street Journal*, July 4, 2005).[4] On the same day, the House also voted overwhelmingly to pass an amendment to an appropriations bill (H Amendment 431) that would bar the US Treasury from using its funds to 'recommend approval' of the CNOOC–Unocal merger deal. In sum, there was concrete evidence showing that the US Congress had attempted to forestall CNOOC's acquisition of Unocal.

In the meantime, the executive branch of the US government offered no support to CNOOC's bid for Unocal either, while the American public appeared to disapprove of the deal. A pre-emptive review from the White House would benefit CNOOC's acquisition of Unocal as the White House had the final say over approving the deal. In addition, it could help eliminate the political uncertainty overhanging the deal. Nevertheless, on June 28, a White House spokesperson said that the US government would review the deal only if CNOOC's bid was accepted by Unocal ('US Seems Wary of Giving CNOOC Fast Review of Bid', *Wall Street Journal*, June 28, 2005). Thereafter, on July 14, a Wall Street Journal and NBC News poll indicated that 73% of the respondents opposed the proposed acquisition ('US Public is Hostile to CNOOC Bid', *Wall Street Journal*, July 14, 2005).

Furthermore, CNOOC suffered another setback when the Committee on Foreign Investment in the United States (CFIUS) declined to conduct a pre-emptive review of its offer to acquire Unocal. Any foreign company that contemplates to acquire US assets is advised to file a voluntary notice of foreign acquisitions with the CFIUS, especially when the acquisition could threaten US national security.[5] A fast and favorable review from the CFIUS was critical because Unocal's shareholders were scheduled to vote on the Chevron merger proposal on August 10, leaving CNOOC only 40 days to resolve the political uncertainty and convince Unocal's shareholders to accept its bid instead. On July 1, 3 days after the White House had declined to offer a pre-emptive review of the

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[1] Coincidentally, an independent director of CNOOC resigned just a few days after Unocal had accepted Chevron's offer for unspecified health reasons ('CNOOC Independent Director Quits', *Financial Times*, April 8, 2005).

[2] We follow Lehn and Poulsen (1989) to compute the free cash flow of CNOOC.

[3] The parent company of CNOOC would provide two separate loans with the following terms: (i) a $2.5 billion interest-free bridging loan and (ii) a $4.5 billion 30-year loan at 3.5% ('Irrational Fear Have No Place in Fight for Unocal', *South China Morning Post*, June 25, 2005).

[4] The national security concern was overblown by the Congress—Unocal was a relatively small US oil company with assets mainly in the Gulf of Mexico and Southeast Asia. This was substantiated by a report from the US Energy Department a few months after CNOOC had withdrawn its bid, which concluded that 'with one small exception unrelated to energy, there would have been no security risks' associated with CNOOC's takeover of Unocal ("China Oil Scramble 'Does not Harm US'," *Financial Times*, February 8, 2006).

[5] Once a notice is filed, the CFIUS has 30 days to decide whether to investigate the case. If it does decide to do so, it has an additional 45 days to make a recommendation. Once a recommendation is made, the President has 15 days to act. If a transaction is concluded without filing a notice with the CFIUS, the parties involved face the indefinite risk of divestment if the acquisition is later found to threaten US national security.

Table 2
Key event dates.

Date	Cumulative residual returns (1-day and **3-day**)		Description
	Oil and gas exploration	Oil refining	
Panel A. Anti-CNOOC-takeover events			
6/20/05	− 0.001	0.003***	Two US Congressmen called on the Bush administration to review—and potentially
	− 0.016*	**− 0.023***	block—CNOOC's attempt to take over Unocal.
6/27/05	− 0.007***	0.007***	An open letter questioning the CNOOC–Unocal merger deal signed by 41 members of
	− 0.018*	**− 0.018***	Congress was already circulating.
7/13/05	− 0.009***	− 0.005***	CFIUS declined CNOOC's request to perform a review of the CNOOC–Unocal deal.
	− 0.017*	**− 0.020***	
7/14/05	− 0.011***	− 0.008***	In a Wall Street Journal and NBC News poll, 73% of the respondents opposed CNOOC's
	− 0.021*	**− 0.016***	attempted takeover of Unocal.
7/21/05	0.000***	− 0.019***	US Senate passed an amendment to the Foreign Operations Appropriations bill
	0.009*	**− 0.008***	(HR 3057) that would delay the closing of the CNOOC–Unocal deal for 30 days.
7/27/05	− 0.010***	− 0.010***	The US Congress added wording to the Energy Policy Act of 2005 (HR 6) that would
	− 0.011*	**− 0.019***	delay the closing of the CNOOC–Unocal deal for 120 days.
Panel B. CNOOC-takeover events			
6/8/05	0.014***	0.005***	The US-based media widely reported that CNOOC was considering a formal merger
	0.016*	**0.007***	offer for Unocal, in a potential challenge to Chevron's offer to Unocal.
6/23/05	0.004***	0.001	CNOOC made an unsolicited $18.5 billion cash bid for Unocal.
	− 0.008*	**0.007**	
Panel C. Ambiguous events			
6/28/05	− 0.011***	− 0.018***	Anti-CNOOC-takeover news: the White House said the US would review CNOOC's
	− 0.005*	**− 0.006***	proposed takeover of Unocal only if its bid was accepted by Unocal.
			Pro-CNOOC-takeover event: CNOOC and some members of the US Congress suggested that CFIUS could stage a review even before CNOOC's bid was accepted by Unocal.
7/1/05	0.000	− 0.001	Anti-CNOOC-takeover news: the US House of Representatives first voted 333-92 to
	0.002	**− 0.003**	bar the Treasury from using any of its funds to 'recommend approval' of the sale to CNOOC (H Amendment 431). A second and nonbinding resolution, adopted 398-15, expressed concern that the sale 'would threaten or impair' the US national security (HR 344).
			Pro-CNOOC-takeover news: CNOOC filed a notice of foreign acquisitions with CFIUS.

This table provides detailed descriptions of the six anti-CNOOC-takeover, two CNOOC-takeover, and two ambiguous events used in this study. It also includes the one-day and three-day residual returns around the event dates of an equal-weighted portfolio of 66 US oil and gas exploration firms (excluding Unocal) and an equal-weighted portfolio of 13 US oil refining firms (excluding Chevron). Anti-CNOOC-takeover events are the political actions that opposed CNOOC's acquisition of Unocal. CNOOC-takeover events are the announcements indicating CNOOC's intention and decision to submit a formal merger offer to Unocal. Ambiguous events involve the concurrence of (i) a political action that opposed CNOOC's acquisition of Unocal and (ii) a CNOOC-initiated action that signaled a continuation of its bid for Unocal. Denote $D_{k,t}$ the binary variable that takes one during the three-day period around a given event date, t^*, and zero otherwise. For each of the event dates (i.e., t^*), the 3-day cumulative residual returns are computed by summing the coefficients $\gamma_{i,k}$ of industry i over $k = [-1, +1]$ by using the multifactor pricing model:

$$R_{it} = \alpha_i + \beta_{oi}R_{ot} + \beta_{mi}R_{mt} + \beta_{fi}R_{ft} + \sum_{k=-1}^{+1} \gamma_{i,k}D_{k,t} + \varepsilon_{it}$$

Statistical significance is marked, at 1% ('***'), 5% ('**') and 10% ('*') levels, based on the robust standard errors.

deal, CNOOC filed a notice with the CFIUS, requesting the committee to review its bid for Unocal. However, the CFIUS rejected this request on July 13 and indicated that it would open an investigation only if Unocal scrapped its agreed deal with Chevron and finalized a deal with CNOOC ('CNOOC Bid Review Is Dealt Setback', *Wall Street Journal*, July 13, 2005).

While CNOOC was running into roadblocks in its bid for Unocal, Chevron made a significant move to close its deal. On July 19, Chevron increased its stock and cash offer to $63.01 per share to Unocal's shareholders. The total value of this offer at approximately $17.9 billion was $1.4 billion above the previous one but remained $0.6 billion shy of CNOOC's. Given that CNOOC's offer was beset with political uncertainty, Chevron's move further reduced the likelihood of Unocal's shareholders considering CNOOC's proposal.

Subsequently, the US Congress created two more hurdles for CNOOC. On July 20, 21 days before Unocal's shareholders were scheduled to vote on Chevron's offer, the US Senate passed an amendment to the Foreign Operations Appropriation Bill (HR 3057), which would delay the US government's approval of any acquisition of a US company by a foreign government-owned entity for 30 days. This amendment required the US government to approve such acquisitions only after the Secretary of State's delivery of an assessment as to whether there were reciprocal laws allowing for similar transactions

in that foreign country ('Global Ambitions of CNOOC Get Hemmed In', *Wall Street Journal*, July 22, 2005). On July 27, the US Congress further amended the Energy Policy Act of 2005 (HR 6) to require a 120-day review of China's growing energy demands before any CNOOC–Unocal deal could be effected ('CNOOC May Face A Fresh Obstacle in Bid for Unocal', *Wall Street Journal*, July 27, 2005).

On the whole, the vehement political opposition to CNOOC's bid created considerable uncertainty for Unocal's shareholders as to whether a deal would ultimately be approved by the US government. With 8 days left before Unocal's shareholders were scheduled to vote on Chevron's merger proposal, CNOOC withdrew its bid on August 2, citing 'unprecedented political opposition' as the reason.

4. Sample and data

We search The New York Times, The Wall Street Journal, and The Washington Post between January 1, 2005 and August 15, 2005, to gather every news story about CNOOC's attempted takeover of Unocal. As our aim is to examine the stock price reaction of US oil companies to the major political events, we identify an event date as the first trading day on which these companies could react to the news. For example, in the evening of June 30, the House of Representatives passed a resolution (HR 344) and an amendment (H Amendment 3058) to thwart CNOOC's attempted takeover of Unocal. However, as the US stock market was closed when this action occurred, we choose July 1 as the event date, i.e. the first trading day after this action had occurred. When we are unsure about when an event exactly took place, we crosscheck the event date by using company filings.

Table 2 provides the detailed descriptions of three event groups. 'Anti-CNOOC-takeover events' refer to the political actions that opposed CNOOC's acquisition of Unocal, while 'CNOOC-takeover events' refer to the announcements indicating CNOOC's intention and decision to submit a formal merger offer to Unocal. 'Ambiguous events' involve the concurrence of (i) a political action that opposed CNOOC's acquisition of Unocal and (ii) a CNOOC-initiated action that signaled a continuation of its bid for Unocal.

We obtain our sample of US non-merging oil companies from the CRSP database. Our sample includes firms that are incorporated in the US and specializing in either the oil and gas exploration industry (excluding Chevron) or the oil refining industry (excluding Unocal).[6,7] The final sample includes 66 US oil and gas exploration firms and 13 US oil refining firms. Appendix B lists the details of all the US non-merging oil firms used in this study. We collect the security return data from the CRSP database and the daily crude oil price data (i.e. the West Texas Intermediate crude spot price) from the US Energy Information Administration.[8]

Table 2 above also shows the one- and three-day residual returns around the ten event dates for an equal-weighted portfolio of 66 US oil and gas exploration firms and an equal-weighted portfolio of 13 US oil refining firms.[9] This residual return is the actual stock return minus the predicted return based on a multifactor pricing model, to be described in Section 5.

5. Methodology

We employ the multivariate regression model which is commonly used in stock market studies of regulation (e.g., Binder, 1985; Bittlingmayer and Hazlett, 2000; Izan, 1980; Schipper and Thompson, 1983; Smith et al., 1986). A multifactor pricing model is used because, in addition to the market return, crude oil return is also a key determinant of the stock returns of oil companies. Using a portfolio of oil stocks from the Toronto Stock Exchange, Sadorsky (2001) finds that crude oil return is significantly correlated with the returns on oil stocks. Specifically, he shows that the adjusted R-square increases from 0.04 to 0.22 when crude oil return is added as an explanatory variable in the market model.

Meanwhile, to prevent any contemporaneous events from biasing our results, we include the stock returns of a control group in the multifactor pricing model. The ideal control group should be influenced by contemporaneous events but unaffected by the anti-CNOOC-takeover events. We use foreign oil and gas companies that are cross-listed on the major US stock exchanges (hereinafter referred to as 'oil and gas ADRs') as our control group.[10] We expect that the six anti-CNOOC-takeover events would affect only the US oil companies, while contemporaneous events would affect both the US and foreign oil companies. On the one hand, as the political opposition to CNOOC's attempted takeover of Unocal raised the costs of foreign firms in acquiring US oil firms, the share prices of US oil companies should fall to reflect a contraction in their expected takeover premiums, while those of foreign oil companies should stay intact. On the other hand, contemporaneous events such as geopolitical, oil, and macroeconomics shocks should affect both the US and foreign oil companies.

We obtain our sample of oil and gas ADRs from the CRSP database. Our control group includes 23 ADRs in the oil and gas exploration industry and 6 ADRs in the oil refining industry. Appendix C lists the details of all the oil and gas ADRs used in this study.

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[6] To prevent any potential bias to our results, we exclude Chevron and Unocal in our sample. While it is not shown here, our results remain the same even if they are included in the sample.

[7] We use the Standard Industry Classification (SIC) code to classify firms in their respective industries. The SIC codes for the oil and gas exploration industry and the oil refining industry are 1311 and 2911, respectively.

[8] The data on crude oil price are available for download at http://tonto.eia.doe.gov/dnav/pet/hist/rwtcd.htm.

[9] We also construct portfolios using value-weighted method, while it is not shown here, our results remain qualitatively similar to those using equal-weighted method.

[10] An American Depository Receipts (ADR) represents ownership in the shares of a foreign company trading on US financial markets.

Table 3
Regression results.

The corresponding t-statistics are in parentheses, based on the robust standard errors. Statistical significance is marked, at 1% ('***'), 5% ('**') and 10% ('*') levels.

	α_i	β_o	β_m	β_f	γ_{i-1}	$\gamma_{i,0}$	$\gamma_{i,+1}$	$\Sigma\gamma_{i,k}$	R^2
Panel A. Anti-CNOOC-takeover events									
Oil and gas exploration industry	0.000	0.092***	0.448***	0.809***	0.000	−0.009***	0.000	−0.010**	0.815
	(0.781)	(4.843)	(5.496)	(16.072)	(−0.085)	(−4.217)	(−0.095)	(−2.389)	
Oil refining industry	0.001	0.154***	0.732***	0.737***	−0.005***	−0.004	−0.006	−0.015***	0.588
	(1.476)	(3.156)	(5.242)	(8.350)	(−4.645)	(−1.007)	(−1.079)	(−2.757)	
Panel B. Ambiguous events									
Oil and gas exploration industry	0.000	0.099***	0.479***	0.800***	−0.003	−0.005	0.012***	0.004	0.809
	(0.200)	(5.265)	(5.936)	(16.899)	(−0.912)	(−1.365)	(18.950)	(0.895)	
Oil refining industry	0.001	0.156***	0.726***	0.749***	0.002	−0.009	0.005***	−0.002	0.582
	(0.991)	(3.141)	(5.141)	(8.371)	(0.704)	(−1.496)	(4.052)	(−0.235)	

This table presents the OLS estimates of the multifactor pricing model over the three-day window (day -1 to day +1) for the two types of takeover events: (i) Anti-CNOOC-takeover and (ii) ambiguous events of an equal-weighted portfolio of 66 US oil and gas exploration firms (excluding Unocal) and an equal-weighted portfolio of 13 US oil refining firms (excluding Chevron). Denote $D_{k,t}$ the binary variable that takes one during the three-day period around a given event date, t^*, and zero otherwise. For each of the event dates (i.e., t^*), the 3-day cumulative residual returns are computed by summing the coefficients $\gamma_{i,k}$ of industry i over $k = [-1, +1]$ by using the multifactor pricing model:

$$R_{it} = \alpha_i + \beta_{oi}R_{ot} + \beta_{mi}R_{mt} + \beta_{fi}R_{ft} + \sum_{k=-1}^{+1} \gamma_{i,k}D_{k,t} + \varepsilon_{it}$$

We apply the following multifactor pricing model:

$$R_{it} = \alpha_i + \beta_{oi}R_{ot} + \beta_{mi}R_{mt} + \beta_{fi}R_{ft} + \sum_{k=-1}^{+1} \gamma_{i,k} + \varepsilon_{it} \qquad (1)$$

where R_{it} is the rate of return on an equal-weighted portfolio of industry i's stocks on day t; R_{mt} is the rate of return on the CRSP equal-weighted market index on day t; R_{ot} is the simple rate of return on crude oil on day t; and R_{ft} is the rate of return on an equal-weighted portfolio of ADRs that have the same SIC code as industry i on day t. For anti-CNOOC-takeover or ambiguous events, $D_{k,t}$ is a binary variable that takes the value of one during the three-day period ($k = [-1, +1]$) around a given event date t^*, and zero otherwise. The coefficients β_{oi}, β_{mi}, and β_{fi} are the oil beta, the market beta, and the foreign oil firm beta, respectively, for an equal-weighted portfolio of industry i's stocks, while the $\gamma_{i,k}$ coefficient estimates are the daily leading, coincident and lagging effects of the event for an equal-weighted portfolio of industry i's stocks. The cumulative residual returns of the event are computed by summing the coefficient estimates of $\gamma_{i,k}$ from k days before to k days following the event date. Throughout this paper, we report the cumulative residual returns over a three-day window ($k = 1$). We apply the multifactor pricing model by using daily returns between August 31, 2004 and December 9, 2005, i.e. 90 trading days prior to the day when CNOOC's interest in acquiring Unocal was first revealed publicly to 90 trading days following the day when CNOOC withdrew its bid for Unocal.

6. Empirical results

6.1. Stock reactions of US non-merging oil firms to anti-CNOOC-takeover events

Panel A of Table 2 presents the one- and three-day residual returns attributable to each of the six anti-CNOOC-takeover events for an equal-weighted portfolio of 66 US oil and gas exploration firms and an equal-weighted portfolio of 13 US oil refining firms. The opposition from the two US Congressmen staged on June 20 was widely covered by the media and had significant industry-wide implications. Specifically, the opposition sent a strong message to CNOOC, and possibly other Chinese and foreign companies, that the US Congress did not welcome them to acquire US oil companies. Consistent with our expectations, the stocks of the US oil firms reacted negatively and significantly to this event. In the three-day period around this event, the market value of the oil refining portfolio declined by 2.3% ($t = -9.73$), while that of the oil and gas exploration portfolio declined by 1.6% ($t = -10.41$).

Similarly, the stocks of the US oil companies also reacted unfavorably and significantly for each of the other anti-CNOOC-takeover events. Over the three-day period surrounding the remaining five events, the market value of the oil refining portfolio dropped by a minimum of 0.8% ($t = -3.21$) to a maximum of 2.3% ($t = -9.73$) per event, while that of the oil and gas exploration portfolio fell by a minimum of 1.1% ($t = -6.49$) to a maximum of 2.1% ($t = -11.76$) per event. The only exception was the US Senate opposition initiated on July 21, 2005. On this day, the market value of the oil and gas exploration portfolio increased rather than decreased over the three-day period.

Panel A of Table 3 presents the estimates from Eq. (1) of the six anti-CNOOC-takeover events taken altogether. Over the three-day period around the six anti-CNOOC-takeover events (Panel A), the market value of the oil refining portfolio declined by an average of 1.5% ($t = -2.76$) per event, while that of the oil and gas exploration portfolio contracted by an average of 1% ($t = -2.39$) per event.
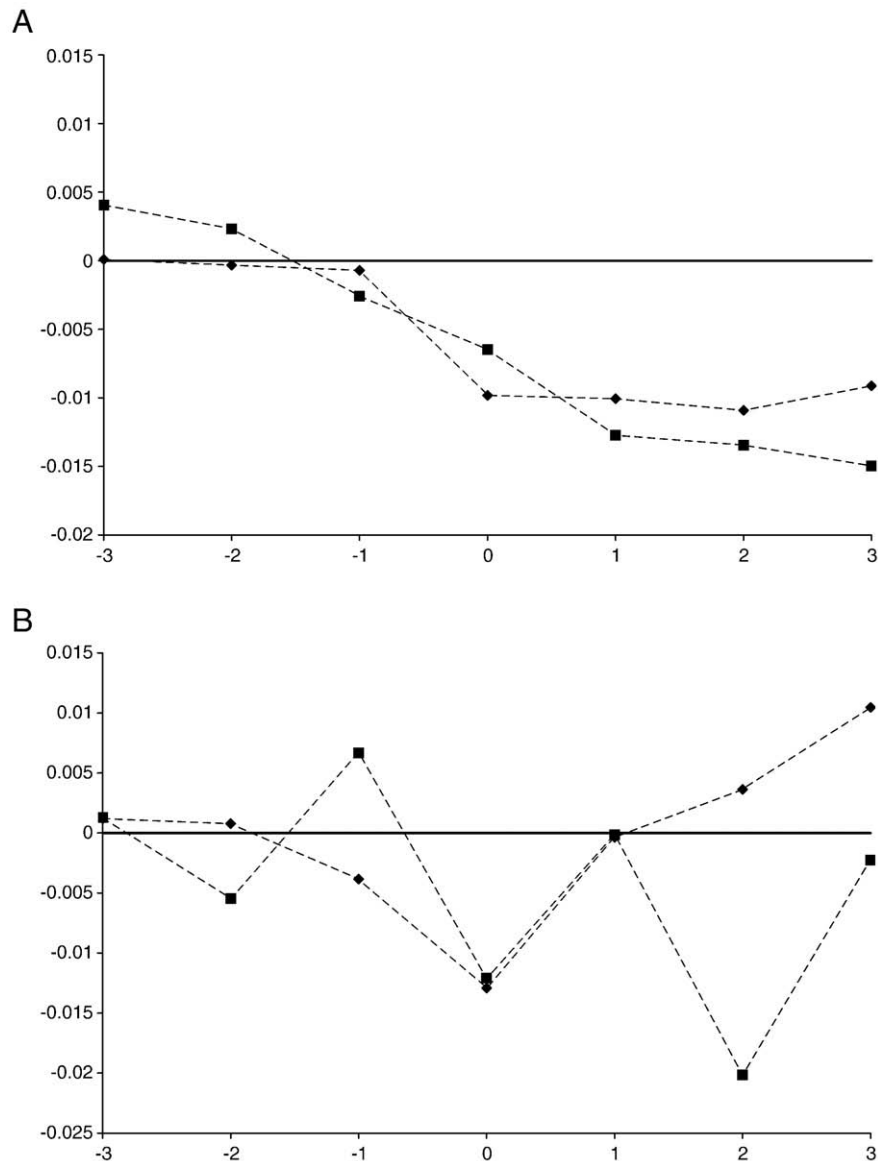
Fig. 1. Cumulative residual returns plot. This figure plots the cumulative residual returns of an equal-weighted portfolio of 66 US oil and gas exploration firms (excluding Unocal, solid diamond), and an equal-weighted portfolio of 13 US oil refining firms (excluding Chevron, solid square) in the sample. The cumulative residual returns are from day −3 to day 3 around the event date. A. Anti-CNOOC-takeover events. B. Ambiguous events.

The negative stock market reaction of the US oil stocks is consistent with our claim that the anti-CNOOC-takeover events had erected political barriers against foreign acquirers to purchase US oil companies. Consequently, the stocks of US oil companies fell in anticipation of a lower future takeover probability and expected takeover premium. Nevertheless, it is also possible that the negative stock market reaction was in part due to an anticipation of future difficulties for US companies to enter the Chinese market, i.e. economic reprisals.[11] The economic reprisal argument appears to be shared by key US oil companies. For example, Lee Raymond, the CEO of Exxon Mobil, said that it would be a "big mistake" for the US to block CNOOC from taking over Unocal ('China's CNOOC Lobs in Rival Bid to Acquire Unocal", *Wall Street Journal*, June 23, 2005).

Fig. 1A presents the average cumulative residual returns in a seven-day event window. The cumulative residual returns of the oil and gas exploration portfolio dropped significantly on the day prior to the event ($k = -1$) and remained negative throughout the rest of the event window. This compared with the cumulative residual returns of the oil refining portfolio, which decreased almost every day during the seven-day event window, with the largest drops occurring between 2 days prior to the event ($k = -2$)

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[11] We thank an anonymous referee for suggesting this alternative hypothesis.

and 1 day after the event ($k = +1$). The cumulative residual returns of the oil refining portfolio became negative on the day prior to the event ($k = -1$) and remained negative throughout the rest of the event window. These results again indicate that the stocks of the US oil firms reacted unfavorably to the anti-CNOOC-takeover events.

The total loss in the US oil industries was substantial and economically significant. The two portfolios of 13 US oil refining firms and 66 US oil and gas exploration firms used in this study had an aggregate market capitalization of nearly $528 billion and $190 billion, respectively, as of June 1, 2005, 6 days prior to CNOOC's public acknowledgement of its intention to submit a formal bid to Unocal. The respective cumulative three-day residual returns of -1.5% and -1% for the oil refining and the oil and gas exploration portfolios shown in Panel A of Table 3 translate to average losses of some $7.9 billion and $1.9 billion per anti-CNOOC-takeover event for these two portfolios correspondingly.

For the six anti-CNOOC-takeover events, the aggregate cumulative decline in market value was above $47.5 billion for the oil refining portfolio and $11.4 billion for the oil and gas exploration portfolio. Thus, the combined cumulative decline in the two portfolios amounted to nearly $59 billion, or approximately 8.2% of the total market capitalization of all the US oil companies used in this study.

6.1.1. Cross-sectional tests to correct for event-induced variance

Our multivariate regression methodology presumes that variance remains unchanged during the event period and that the reaction to the anti-CNOOC-takeover events is identical across firms. Yet, these assumptions could be strong and bias our results. To account for the possibility of an increase in variance during the event period and that the reaction to the anti-CNOOC-takeover events may not be identical across firms, we follow the suggestion by Mulherin (2007) and develop cross-sectional tests to examine the anti-CNOOC-takeover effects. Cross-sectional tests are commonly used to correct for event-induced variance and allow reaction to the event to vary across firms. For example, as a robustness check, Mitchell and Netter (1989) use cross-sectional tests to examine the stock market reaction around the stock market crash of 1987. Specifically, they use a variance estimate based

Table 4
Cross-sectional tests to correct for event-induced variance.
Statistical significance is marked, at 1% ('***'), 5% ('**') and 10% ('*') levels.

	6/20/05	6/27/05	7/13/05	7/14/05	7/21/05	7/27/05
Panel A. Anti-CNOOC-takeover events for oil and gas exploration firms						
Average three-day CAR	−0.019	−0.021	−0.020	−0.023	0.005	−0.014
	(−2.75)***	(−3.48)***	(−4.41)***	(−4.18)***	(1.49)	(−3.29)***
	{−1.94}*	{−2.46}**	{−3.12}***	{−2.96}***	{1.05}	{2.33}**
	[−4.35]***	[−4.78]***	[−6.21]***	[−6.43]***	[2.63]***	[−3.55]***
Total number of firms	66	66	66	66	66	66
Number of firms with a negative three-day CAR	48 {{0.000}}	48 {{0.000}}	54 {{0.000}}	50 {{0.000}}	26 {{0.968}}	46 {{0.001}}
Panel B. Anti-CNOOC-takeover events for oil refining firms						
Average three-day CAR	−0.026	−0.026	−0.024	−0.018	−0.016	−0.022
	(−5.58)***	(−5.05)***	(−1.99)*	(−2.45)**	(−2.66)**	(−4.32)***
	{−3.95}***	{−3.57}***	{−1.41}	{−1.73}*	{−1.88}*	{−3.05}***
	[−5.19]***	[−5.04]***	[−2.32]**	[−3.24]***	[−2.57]**	[−5.06]***
Total number of firms	13	13	13	13	13	13
Number of firms with a negative three-day CAR	12 {{0.002}}	12 {{0.002}}	11 {{0.011}}	12 {{0.002}}	11 {{0.011}}	11 {{0.011}}

	Oil and gas exploration firms	Oil refining firms
Panel C. Average one-day CAR of the six anti-CNOOC-takeover events taken altogether		
Average one-day CAR	−0.010	−0.007
	(−8.65)***	(−4.24)***
	{−6.12}***	{−3.00}***
	[−11.38]***	[−4.98]***
Total number of firms	66	13
Number of firms with a negative one-day CAR	60 {{0.000}}	12 {{0.002}}
Panel D. Average three-day CAR of the six anti-CNOOC-takeover events taken altogether		
Average three-day CAR	−0.012	−0.020
	(−5.07)***	(−5.93)***
	{−3.59}***	{−4.19}***
	[−6.98]***	[−7.97]***
Total number of firms	66	13
Number of firms with a negative three-day CAR	56 {{0.000}}	13 {{0.000}}

Panels A and B provide the average three-day cumulative residual return (CAR) around each of the six anti-CNOOC-takeover events of 66 US oil and gas exploration firms (excluding Unocal) and of 13 US oil refining firms (excluding Chevron), respectively. Panel C (Panel D) provides the average one-day (three-day) CAR of the six anti-CNOOC-takeover events taken altogether for 66 US oil and gas exploration firms and 13 US oil refining firms. Anti-CNOOC-takeover events are the political actions that opposed CNOOC's acquisition of Unocal. *t*-statistics based on the ordinary cross-sectional test are in parentheses; *t*-statistics based on doubling the variance estimated in the ordinary cross-sectional test are in braces; *t*-statistics based on the standardized cross-sectional test are in brackets; and *p*-values based on the nonparametric Wilcoxon signed rank test of percent of firms with negative three-day CAR are in double braces.

Table 5
Takeover premiums of three mega mergers of oil firms in 1998–1999.

Announcement date	Acquiring firm	Target firm	Value of takeover offer ($billion)	Market value of target firm[a] ($billion)	Takeover premium[b] ($billion) [%]
8/11/1998	BP	Amoco	$48.17	$39.46	$8.71 [22.07%]
12/1/1998	Exxon	Mobil	$78.95	$58.39	$20.56 [35.21%]
4/1/1999	BP-Amoco	ARCO	$27.22	$17.31	$9.91 [57.25%]
Mean			$51.45	$38.30	$13.06 [38.18%]
Total			$154.34	$115.16	$39.18

This table presents the takeover premiums in dollar and in percentage terms paid for merging Amoco and BP, Mobil and Exxon, and ARCO and BP-Amoco during the merger wave of oil companies in 1998–1999.
Source: The Thomson Financial SDC Database.
[a] The market value of the target firm is calculated by multiplying the closing price and shares outstanding of the target firm four weeks prior to the announcement date.
[b] Takeover premium is computed based on the deal value as a percentage of the target's market value four weeks prior to the announcement of the deal.

on cross-sectional returns during the event period (hereinafter referred to as ordinary cross-sectional tests) and nonparametric tests.

We follow Mitchell and Netter (1989) and use various cross-sectional tests to correct for increases in variance during the event period: (i) an ordinary cross-sectional test, (ii) double the variance estimated in the ordinary cross-sectional tests, (iii) a nonparametric test, and (iv) a standardized cross-sectional test. We also include the standardized cross-sectional test because it is powerful in detecting the anti-CNOOC-takeover effects especially when the average cumulative residual return is relatively small, as in our case. Boehmer et al. (1991) find that, in the presence of event-induced variance and when the average abnormal return is slightly different from zero, this test is more powerful than ordinary cross-sectional tests and sign tests in rejecting the null hypothesis. Appendix D provides a detailed description of these cross-sectional tests.

Panels A and B of Table 4 provide the average three-day cumulative residual returns (CAR) estimated based on these cross-sectional tests around each of the six anti-CNOOC-takeover event of 66 US oil and gas exploration firms and 13 US oil refining firms, respectively. Overall, our results remain qualitatively the same and hence are robust to the event-induced variance problem, if any. Numerically, the average three-day cumulative residual returns based on these cross-sectional tests (Panels A and B, Table 4) are somewhat stronger (i.e. more negative) than those estimates based on the multivariate regression methodology (Panel A, Table 2). Nevertheless, the *t*-values based on these cross-sectional tests are smaller in absolute magnitude than those estimates based on the multivariate regression model (Panel A, Table 2). This indicates that the anti-CNOOC-takeover events might have induced increases in variance during the event period.

Nonparametric tests are also used to account for the possibility of increased variance during the event period, including the increased variances arising from intertemporal and contemporaneous correlation of estimated residual returns. Our results based on the Wilcoxon signed rank test (in double braces of Panels A and B, Table 4) remain qualitatively the same as those estimates based on the multivariate regression methodology (Panel A, Table 2). More importantly, this nonparametric test also rejects the null hypothesis at the 1% level for all the anti-CNOOC-takeover event dates in both oil industries. The only exception was the US Senate opposition initiated on July 21, 2005. On this day, the market value of the oil and gas exploration portfolio increased rather than decreased over the three-day period.

Panels C and D of Table 4 provide the average one- and three-day cumulative residual returns estimated based on these cross-sectional tests when all the six anti-CNOOC-takeover events are taken altogether. Again, our results remain qualitatively the same and are robust to the event-induced variance problem. Similarly, the average one- and three-day cumulative residual returns estimated based on these cross-sectional tests (Panels C and D, Table 4) are somewhat stronger (i.e. more negative) than those estimates based on the multivariate regression model (Panel A, Table 3). Our nonparametric results indicate that the impact of the anti-CNOOC-takeover events is widespread. For example, 56 (84.8%) of the 66 US oil and gas exploration firms and 13 (100%) of the 13 US oil refining firms experienced a loss in market value over the three-day event period when all the six anti-CNOOC-takeover events are taken altogether. In addition, all our nonparametric results reject the null hypothesis at the 1% level.

6.1.2. Plausibility of our results

The estimated 8% drop in industry value may seem excessive and implausible at first glance because not every firm in the oil industries is a potential takeover target. Nevertheless, we believe that our estimate is plausible because anecdotal evidence suggests that the takeover premium in the oil industries is significant. For example, the takeover premium for Unocal offered by Chevron was 62.9%.[12] Even for mega mergers of oil companies, their takeover premiums were sizable. Table 5 presents the takeover premiums of three mega mergers in the oil industry during the merger wave of oil companies in 1998–1999. Table 5 shows that the average takeover premium of merging Amoco and BP; Mobil and Exxon; and ARCO and BP-Amoco was 38.18%, with the aggregate takeover premium of above $39 billion.

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[12] The actual takeover premium is computed based on the deal value as a percentage of the target's market value four weeks prior to the announcement of the deal.
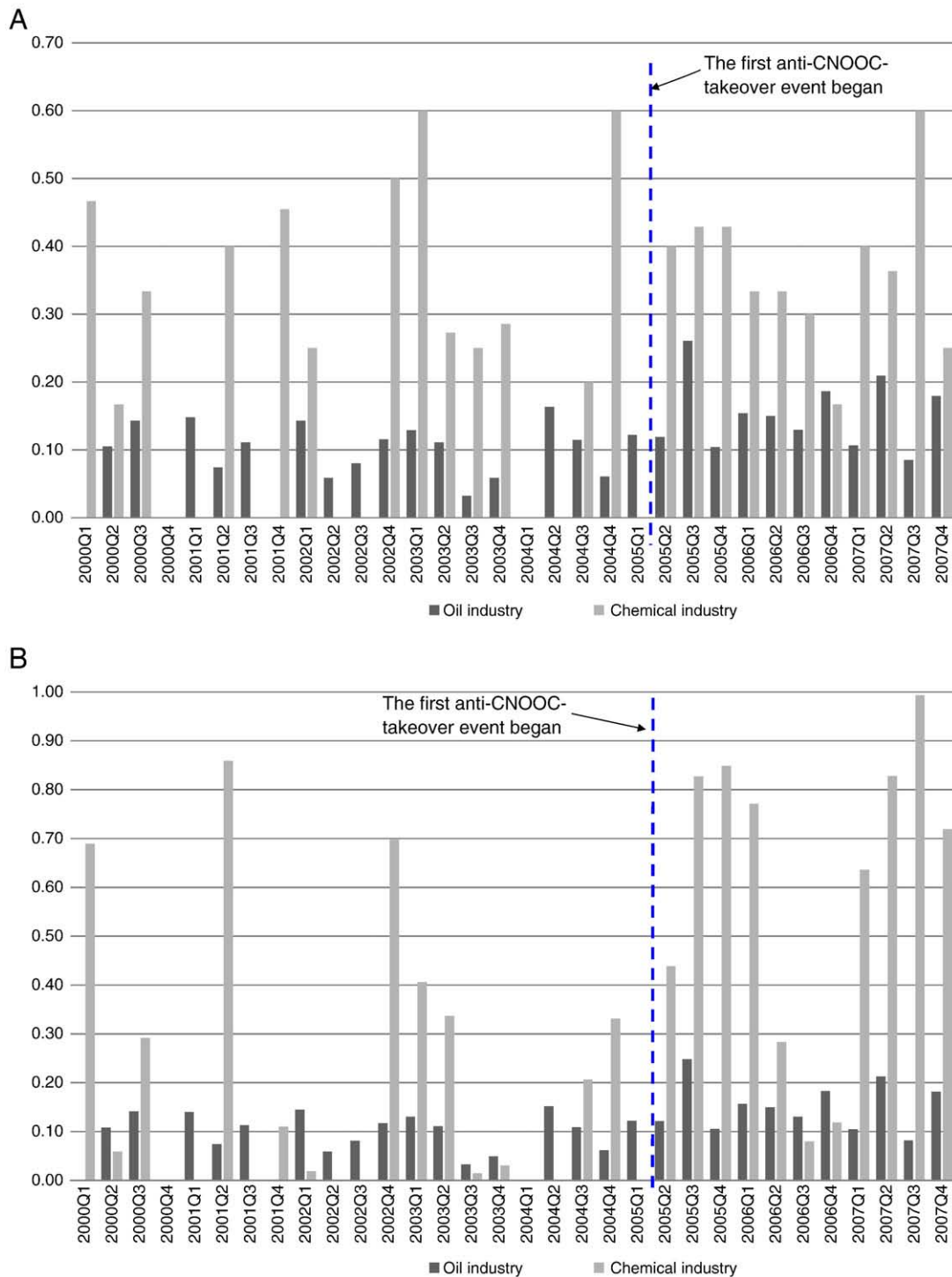
Fig. 2. Cross-border ratio in US oil and chemical industries: 2000Q1–2007Q4. Panel A. Cross-border ratio measured by number of M&A. Panel B. Cross-border ratio measured by deal value of M&A.

These takeover premiums are comparable to those estimated in the literature. For example, Schwert (2000) examines 2296 takeover contests for exchange-listed target companies during the period of 1975-1996 and finds that the mean takeover premium was 22%, while Andrade, Mitchell and Stafford (2001) analyze a total of 4300 completed M&A during the period of 1973–1998 and find that the median takeover premium was 37.9%, with the combined takeover premium amounting to approximately

$38.7 billion. As we measure the losses for all the US oil firms instead of a subset as in the previous studies, our finding of approximately $59 billion should be regarded as plausible.

Moreover, the $59 billion estimated loss in the market value of the US oil companies would appear reasonable if the market had anticipated that a successful takeover of Unocal by CNOOC would trigger a merger wave in the oil industries. The possibility of a merger wave is not far-fetched as Mitchell and Mulherin (1996) find that mergers are strongly clustered by industry and directly related to economic shocks. One such economic shock was the sharp rise in the oil price since 2002. The crude oil price increased by approximately three folds in 2002-2005. In fact, Jensen (1986) suggests that similar shocks in the oil price had triggered the merger wave in the oil industries during the 1970s. In the following section, we examine whether the anti-CNOOC-takeover events curb future cross-border M&A in the US oil industries.

In addition, M&A have always been common in the oil industries. Andrade, Mitchell and Stafford (2001) suggest that the oil industries were among the top five industries with respect to annual merger activities in the 1970s and 1980s. Another example was the merger wave in the oil industries during 1998–1999, with the value of all completed deals reaching around $208 billion.[13] If the average takeover premium was 25%, the combined takeover premium in the US oil industries would be $52 billion (= 0.25 × $208 billion), only $7 billion shy of our estimate on the loss in industry value.

6.1.3. Cross-border mergers and acquisitions in the US oil industries

In addition to the negative stock market reaction, we also expect the anti-CNOOC-takeover events would discourage foreign acquirers from buying US oil companies. To investigate this issue, we collect data on domestic and cross-border M&A of US oil companies (SIC = 1311 and 2911) between the first quarter of 2000 (2000Q1) and the final quarter of 2007 (2007Q4) from the Thomson Financial SDC Database. To ensure the M&A are large enough to warrant political scrutiny and oppositions, we exclude those whose takeover offer is smaller than US$10 million, the smallest market capitalization of our sample firms.

Considering the possibility of confounding events that may bias our results, we include the US chemical industry (SIC = 2800–2899) as our control group. We choose the US chemical industry for three reasons. First, crude oil is a major input that is common to oil and chemical industries. Consequently, shocks in crude oil prices change input costs and could trigger consolidations and organizational changes in these industries. Mitchell and Mulherin (1996) provide empirical evidence to support this claim. They find that oil shocks increase M&A in not only the oil industry but also oil-dependent industries, e.g., the chemical industry. Second, the US chemical industry is unaffected by the anti-CNOOC-takeover events because there was no such political opposition in this industry during our sample period. Third, to prevent any country specific effect from biasing our results, we choose a control group in the US rather than that in a foreign country.

Fig. 2A and B presents the cross-border ratio in the US oil and chemical industries. This cross-border ratio is measured by either the number or the deal value of M&A. Specifically, the cross-border ratio in Fig. 2A (2B) is computed by dividing the number (deal value) of cross-border M&A by the aggregate number (deal value) of domestic and cross-border M&A during the quarter. Contrary to our expectations, the cross-border ratio in the US oil industry had increased substantially since 2005Q2, the quarter where the first anti-CNOOC-takeover event happened. While it is not shown here, when the cross-border ratio is measured by the number (deal value) of M&A, it had increased by 0.07 (0.07) in the US oil industry since 2005Q2. The increase is statistically significant at the 1% level.

Nevertheless, the increase appears to be driven by the oil shock (i.e. five-fold increase in crude oil prices in 2002–2007) rather than the anti-CNOOC-takeover events. We reason that, during the same period, the cross-border ratio had increased even more notably in the US chemical industry, an industry that had encountered no political opposition to cross-border M&A. When the cross-border ratio in the chemical industry is measured by the number (deal value) of M&A, it had increased by approximately 0.14 (0.40) since 2005Q2. The increase is also statistically significant at the 1% level.

To separate the oil shock effect from the political opposition effect, we apply the difference-in-difference methodology. Specifically, we model the cross-border ratio as follows:

$$y_t^i = \alpha^i + \phi f(T) + \gamma^i TIME + \delta_1^i D1 + \delta_2^i D2 + X'\beta^i + \varepsilon_t^i, \tag{2}$$

where y_t^i denotes the cross-border ratio in industry i during quarter t. $f(T)$ is a nonlinear time trend variable that is common to the US oil and chemical industries; it also captures time-varying macroeconomic factors that are missing in the regression model. $TIME$ is a linear time trend variable; $D1$ is a binary variable which measures the political opposition effect during the period when the six anti-CNOOC-takeover events were unfolding; $D2$ is a binary variable which measures the political opposition effect during the period after the six anti-CNOOC-takeover events. $D1$ takes the value of one if the calendar quarter is either 2005Q2 or 2005Q3 and zero otherwise; $D2$ takes the value of one if the calendar quarter is after 2005Q3 and zero otherwise; X is a vector of explanatory variables. As standard errors of time-series data are typically not *iid*, we follow Golbe and White (1988) and allow our standard errors to follow an autoregressive process. Specifically, ε_t^i follows a third-order autoregressive process, namely $\varepsilon_t^i = \theta_1^i \varepsilon_{t-1}^i + \theta_2^j \varepsilon_{t-2}^i + \theta_3^j \varepsilon_{t-3}^i + u_t^i$ and $u_t^i : N(0, (\sigma_u^i)^2)$. The superscript i denotes industry i (i.e. the oil or chemical industry) and the subscript t denotes time in a quarterly interval.

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[13] We obtain the data on individual merger deals from the Transaction Roster in 1998 and 1999 of the Mergerstat Review.

Table 6
Cross-border M&A of US targets.

	Number of M&A	Deal value of M&A
$D1$	−0.375*** (−3.07)	−0.760*** (−4.71)
$D2$	−0.261*** (−3.16)	−0.675*** (−6.06)
$TIME$	0.0086 (1.68)	0.0159** (2.3)
$\Delta WMKT_t$	1.1037 (1.03)	3.3084** (2.43)
$\Delta WMKT_{t-1}$	1.9098 (1.62)	3.7929** (2.65)
$\Delta EXRATE_t$	0.0134 (1.05)	0.0003 (0.02)
$\Delta EXRATE_{t-1}$	0.0361** (2.54)	0.0537*** (3.42)
$\Delta OILPRI_t$	−0.009 (−1.33)	−0.032*** (−3.34)
$\Delta OILPRI_{t-1}$	−0.001 (−0.12)	−0.011 (−1.11)
Intercept	−0.684* (−2.04)	−1.125** (−2.49)
$AR(1)$	0.5935*** (2.97)	0.2862 (1.71)
$AR(2)$	0.5447** (2.79)	0.4691*** (3.64)
$AR(3)$	0.6058*** (3.05)	0.7272*** (4.46)
R^2	0.22	0.75

This table presents the estimates of OLS regression of cross-border ratio using the difference-in-difference methodology. y_t^D denotes the difference in cross-border ratio between the US oil industry and the US chemical industry in quarter t; cross-border ratio is measured by either number or deal value of M&A, cross-border ratio measured by number (deal value) of M&A is computed by dividing the number (deal value) of cross-border M&A by the aggregate number (deal value) of domestic and cross-border M&A during the quarter; $TIME$ is a linear time trend variable; $D1$ takes the value of one if the calendar quarter is either 2005Q2 or 2005Q3 and zero if otherwise; $D2$ takes the value of one if the calendar quarter is after 2005Q3 and zero if otherwise; $WMKT_t$ is a simple average of the ratio of daily MSCI World Index (excluding US index) to daily MSCI US Index during quarter t. $EXRATE_t$ is defined as a simple average of the daily weighted average of the foreign exchange value of the US dollar against a subset of the broad index currencies in quarter t; $OILPRI_t$ is defined as the simple average of the daily price of the West Texas Intermediate crude oil during quarter t. $WMKT_t$, $EXRATE_t$, and $OILPRI_t$ are transformed by taking their first and second differences in time, i.e. $\Delta x_t = x_t - x_{t-1}$ and $\Delta x_{t-1} = x_{t-1} - x_{t-2}$.
The corresponding t-statistics are in parentheses. Statistical significance is marked, at 1% ('***'), 5% ('**') and 10% ('*') levels.

First, we subtract the equation for the US chemical industry from that for the US oil industry, rearrange terms, and obtain the following equation:

$$y_t^D = \alpha^D + \gamma^D TIME + \delta_1^D D1 + \delta_2^D D2 + X'\beta^D + \varepsilon_t^D \qquad (3)$$

where $y_t^D = y_t^0 - y_t^C$; $\alpha^D = \alpha^0 - \alpha^C$; $\gamma^D = \gamma^0 - \gamma^C$; $\delta_1^D = \delta_1^0 - \delta_1^C$; $\delta_2^D = \delta_2^0 - \delta_2^C$; $\beta^D = \beta^0 - \beta^C$; and $\varepsilon_t^D = \varepsilon_t^0 - \varepsilon_t^C$

Our explanatory variables include changes in securities prices, currency exchange rates, and oil prices. Extant studies (e.g., Weston, 1953; Melicher et al., 1983) suggest that securities prices are positively correlated with a merger wave. As such, the cross-border ratio should be positively correlated with securities prices in the world market relative to those in the US market. We construct relative securities prices between the world and the US markets ($WMKT_t$) by computing a simple average of the ratio of daily MSCI World Index (excluding US index) to daily MSCI US Index during quarter t. The MSCI World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets other than the US.[14]

International trade literature (Cushman, 1985; Blonigen, 1997) indicates that the US dollar depreciation might have encouraged the inflow of foreign capital into the US during the 1980s. As such, we expect that the strength of the US currency ($EXRATE$) to be negatively correlated with cross-border M&A. Specifically, the cross-border ratio should increase (decrease) when the US currency is weaker (stronger). $EXRATE_t$ is defined as a simple average of the daily weighted average of the foreign exchange value of the US dollar against a subset of the broad index currencies in quarter t. The broad index currencies include the Euro Area, Canada, Japan, United Kingdom, Switzerland, Australia, and Sweden.[15]

Mitchell and Mulherin (1996) provide empirical evidence to suggest that oil shocks and energy dependency drive takeover and restructuring activities. Consequently, changes in crude oil prices affect cross-border M&A. We argue that large oil shocks drive more cross-border M&A because the costs of acquiring foreign targets are larger than those of acquiring domestic targets. For instance, Rossi and Volpin (2004) find that the actual takeover premium for cross-border M&A is larger than that for domestic M&A. Numerically, they find that the average takeover premium is 3% more for cross-border M&A than for domestic M&A. Cross-border M&A are less frequent when oil shocks are mild because the synergistic gains from cross-border M&A are deemed to be small. By the same token, cross-border M&A should be more prevalent when oil shocks are severe. We use changes in crude oil prices as a proxy for the extent of oil shocks. $OILPRI_t$ is defined as the simple average of the daily price of the West Texas Intermediate crude oil during quarter t.

Table 6 presents the estimates of the OLS regression. Consistent with our expectations, the anti-CNOOC-takeover events have appreciably reduced cross-border M&A in the US oil industry. Relative to the US chemical industry, the cross-border ratio (as measured by the number of M&A) in the US oil industry had reduced by 37.5 percentage points during the period when the six anti-CNOOC-takeover events were happening. Similarly, relative to the control industry, the cross-border ratio (as measured by the

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[14] We obtain the daily MSCI World and US Indices from MSCI-Barra at http://www.mscibarra.com/products/indices/equity/performance.jsp.
[15] We obtain the data on the strength of US dollar relative to a subset of the broad index currencies from the Federal Reserve Bank of St. Louis at http://research.stlouisfed.org/fred2/series/TWEXMMTH?cid=105.

number of M&A) in the US oil industry had reduced by 26.1 percentage points during the period after the six anti-CNOOC-takeover events. These reductions in cross-border M&A are sizable and have economic significance.

Our results are substantially stronger when the cross-border ratio is measured by the deal value of M&A. These results imply that, since the first anti-CNOOC-takeover event, M&A in the US chemical industry had been dominated by numerous large cross-border transactions. Yet, during the same period, we witnessed no such domination in the US oil industry. While it is not shown here, in the US chemical industry, only one (20%) of the top five M&A was a cross-border transaction prior to the anti-CNOOC-takeover events. Yet, this figure had increased by four-folds to four (i.e. 80%) out of the top five M&A since the first anti-CNOOC-takeover event occurred. In contrast, in the US oil industry, none of the acquirers were foreigners in the top five M&A prior to the anti-CNOOC-takeover events. Nevertheless, this figure had increased to only one (20%) out of the top five M&A since the first anti-CNOOC-takeover event occurred. In sum, our results imply that the anti-CNOOC-takeover events had discouraged foreign acquirers from buying oil companies in the US, particularly for large US oil companies.

6.2. Stock reactions of US non-merging oil firms to CNOOC-takeover events

We also find that the stocks of the US oil firms reacted favorably when CNOOC announced its intention to submit a formal offer to Unocal, providing further evidence that cross-border acquisitions affect the market values of not only the participating firms but also the domestic non-merging firms in the same industry. We deem it a clean test to examine the effect of cross-border M&A on the expected takeover premiums of non-merging domestic firms given that this event was not anticipated by the market. In addition, it was not confounded by any anti-CNOOC-takeover event as there was no identifiable political opposition prior to it.

Panel B of Table 2 presents the one- and three-day residual returns attributable to the two CNOOC-takeover events. Consistent with our expectations, the stocks of the US oil companies reacted favorably to CNOOC's publicized interest in acquiring Unocal. When the US media first reported CNOOC's intention to submit a formal offer to Unocal on June 8, the market value of the oil refining portfolio increased by 0.7% ($t = 2.77$) while that of the oil and gas exploration portfolio increased by 1.6% ($t = 12.67$) over the three-day period. Thus, our findings lend credence to the claim that rumors and announcements of cross-border acquisitions enhance the expected takeover premiums of non-merging domestic firms.

In a nutshell, the expected takeover premiums of non-merging domestic firms dwindle on the back of political opposition to cross-border acquisitions but expand in light of rumors and announcements of such M&A plans.

6.3. Ambiguous events

Panel C of Table 2 presents the one- and three-day residual returns attributable to two ambiguous events. On an ambiguous event date, the stock market received two pieces of news which conveyed conflicting assessments regarding the likelihood of CNOOC's success in acquiring Unocal: (i) a political action that opposed CNOOC acquiring Unocal and (ii) a CNOOC-initiated action signaling that its bid for Unocal remained effective. For example, on July 1, several US newspapers reported that the House of Representatives had voted overwhelmingly to express its concern about CNOOC's attempted takeover of Unocal, representing a political action to discourage CNOOC. Despite such opposition, CNOOC demonstrated its strong determination to continue with the deal by filing a notice of foreign acquisitions with the CFIUS on the same day.

The stocks of the US oil firms reacted differently to the two ambiguous events: unfavorably to the first (June 28) but indifferently to the second (July 1). In response to the first ambiguous event, the market value of the oil refining portfolio declined by 0.6% ($t = -1.91$) while that of the oil and gas exploration portfolio declined by 0.5% ($t = -3.37$) over the three-day period. In response to the second ambiguous event, the market value of the oil refining portfolio dropped slightly by 0.3% ($t = -1.39$) but that of the oil and gas exploration portfolio increased slightly by 0.2% ($t = 1.24$) over the three-day period.

Panel B of Table 3 presents the estimates from Eq. (1) of the two ambiguous events, taken altogether. The stocks of the US oil firms remained unaffected in light of the ambiguous events. None of the estimates for the three-day cumulative residual returns $\left(\sum_{k=-1}^{+1} \gamma_{i,k} \right)$ is significant at the 5% level. Contrary to our expectations, the share prices of the US oil firms reacted favorably but only mildly to the ambiguous events on the day following the events—the market value of the oil refining portfolio increased by an average of 0.5% ($t = 4.05$) per event while that of the oil and gas exploration portfolio increased by an average of 1.2% ($t = 18.95$) per event.

Fig. 1B presents the cumulative residual returns of the ambiguous events in a seven-day event window, showing different patterns for the two portfolios. The cumulative residual returns of the oil refining portfolio exhibited a mean-reverting pattern with the trend reversing its course every day. For example, the cumulative residual returns of the oil refining portfolio decreased on the event day ($k = 0$) but increased on the following day ($k = +1$). Meanwhile, the cumulative residual returns of the oil and gas exploration portfolio decreased on and prior to the event day ($k = -1$ or 0) but increased after the event day.

7. Robustness tests

7.1. Alternative identification of events

It is possible that we wrongly identify an event date because the identification of an event could be subjective. To ensure the robustness of our main findings, we explore three alternative specifications of event dates.

Fig. 3. Cumulative residual returns during the political opposition window. This figure plots the cumulative residual returns from June 20 to August 2, 2005, of an equal-weighted portfolio of 66 US oil and gas exploration firms (excluding Unocal), dashed line below, and an equal-weighted portfolio of 13 US oil refining firms (excluding Chevron), solid line. The cumulative residual returns are cumulative sums of the coefficients of a series of dummy variables for each date from June 20 to August 2, in the multifactor pricing model:

$$R_{it} = \alpha_i + \beta_{oi}R_{ot} + \beta_{mi}R_{mt} + \beta_{fi}R_{ft} + \sum_{k=6/20}^{8/2} \gamma_{i,k}D_{k,t} + \varepsilon_{it}$$

where $D_{k,t}$ is a binary variable that takes one during the period from June 20 to August 2, 2005, and zero otherwise. The cumulative residual returns at a day t are the sum of $\gamma_{i,k}$ from $k = 6/20$ up to day t.

First, it is possible that our results are transitory rather than permanent. As such, we follow Ryngaert and Netter (1988) and examine a longer event window which covers the entire period when the anti-CNOOC-takeover events were unfolding. Specifically, out of the 10 event dates, we select two well-defined events which mark the beginning and the end of the political opposition and examine the cumulative residual returns of the two portfolios over this period. The two well-defined events are: (i) the beginning—the opposition made by the two US Congressmen on June 20; and (ii) the end—CNOOC's withdrawal of its bid for Unocal on August 2.

Fig. 3 presents the cumulative residual returns between these two well-defined event dates. The cumulative residual returns for the two portfolios turned negative on June 20 when the two Congressmen voiced their opposition and the returns remained negative until CNOOC withdrew its bid for Unocal on August 2. The market value of the oil refining portfolio declined by a total of nearly 12.9% ($t = -5.73$) during the 44 days between the two events. In economic terms, the oil refining portfolio lost nearly $68 billion in market value during this 44-day period. Similarly, the market value of the oil and gas exploration portfolio also declined but mildly by a total of 4.4% ($t = -3.06$), resulting in a total loss of approximately $8.4 billion between the two events. Thus, our earlier conclusion that political barriers to cross-border takeovers have a significant negative economic impact on the US oil industry is validated and is not sensitive to mistakes, if any, in identifying the political events.

Second, we check the robustness of our results with respect to overlapping event windows. There were two consecutive anti-CNOOC-takeover events on July 13 and 14. We exclude the latter and re-construct our analysis. Panel A of Table 7 presents the estimates from Eq. (1) of the five anti-CNOOC-takeover events. The results excluding the overlapping event are slightly stronger in size than our main findings and are economically significant. Over the three-day period, the market value of the oil refining portfolio declined by an average of 1.9% ($t = -2.45$) per event while that of the oil and gas exploration portfolio declined by an average of 1.1% ($t = -1.91$) per event. Overall, our results remain qualitatively the same and hence are robust with respect to overlapping event windows.

Third, we check the robustness of our results with respect to possible misclassification of events, focusing on the ambiguous events in particular. We treat them as anti-CNOOC-takeover events and re-construct our analysis. Panel B of Table 7 presents the estimates from Eq. (1) of the eight anti-CNOOC-takeover events (referred as 'expanded anti-CNOOC-takeover events') after this re-classification. Although the magnitude and statistical significance are slightly weaker when the ambiguous events are treated as anti-CNOOC-takeover events, our results remain qualitatively the same and economically significant. In light of the eight anti-CNOOC-takeover events, the market value of the oil refining portfolio declined by an average of 1.1% ($t = -2.16$) per event while that of the oil and gas exploration portfolio decreased by an average of 0.6% ($t = -1.79$) per event over the three-day period.

Furthermore, to examine if our findings are driven by other contemporaneous events, we search The Wall Street Journal for news relevant to the oil industries other than the anti-CNOOC-takeover events. With the exception of an energy bill passed by the US Senate on June 28, 2005, we find no major contemporaneous events during the sample period. This energy bill was expected to

Table 7

Robustness check (event classification).

The corresponding t-statistics are in parentheses, based on the robust standard errors. Statistical significance is marked, at 1% ('***'), 5% ('**') and 10% ('*') levels.

	α_i	β_o	β_m	β_f	$\gamma_{i,-1}$	$\gamma_{i,0}$	$\gamma_{i,+1}$	$\sum \gamma_{i,k}$	R^2
Panel A. Anti-CNOOC-takeover events (excluding 14 July 2005)									
Oil and gas exploration industry	0.000	0.094***	0.457***	0.809***	0.000	−0.009***	−0.002	−0.011*	0.813
	(0.739)	(5.017)	(5.662)	(16.227)	(−0.043)	(−3.911)	(−0.456)	(−1.913)	
Oil refining industry	0.001	0.154***	0.730***	0.745***	−0.006***	−0.005	−0.007	−0.019**	0.588
	(1.482)	(3.151)	(5.259)	(8.454)	(−7.136)	(−1.249)	(−1.153)	(−2.453)	
Panel B. Expanded Anti-CNOOC-takeover events (including ambiguous events)									
Oil and gas exploration industry	0.000	0.091***	0.442***	0.820***	0.000	−0.009***	0.003	−0.006*	0.817
	(0.656)	(4.864)	(5.555)	(16.643)	(0.113)	(−3.801)	(0.772)	(−1.786)	
Oil refining industry	0.001	0.153***	0.719***	0.747***	−0.003	−0.005	−0.003	−0.011**	0.586
	(1.435)	(3.132)	(5.176)	(8.454)	(−1.375)	(−1.517)	(−0.696)	(−2.157)	

This table presents the OLS estimates of the multifactor pricing model over the three-day window (day -1 to day +1) for (i) non-overlapping anti-CNOOC-takeover events in Panel A and (ii) the expanded anti-CNOOC-takeover events where ambiguous events are treated as anti-CNOOC-takeover events in Panel B of an equal-weighted portfolio of 66 US oil and gas exploration firms (excluding Unocal) and an equal-weighted portfolio of 13 US oil refining firms (excluding Chevron). Denote $D_{k,t}$ the binary variable that takes one during the three-day period around a given event date, t^*, and zero otherwise. For each of the event dates (i.e., t^*), the 3-day cumulative residual returns are computed by summing the coefficients $\gamma_{i,k}$ of industry i over $k = [-1, +1]$ by using the multifactor pricing model:

$$R_{it} = \alpha_i + \beta_{oi}R_{ot} + \beta_{mi}R_{mt} + \beta_{fi}R_{ft} + \sum_{k=-1}^{+1} \gamma_{i,k}D_{k,t} + \varepsilon_{it}$$

benefit rather than hurt the oil industries because it provided approximately \$18 billion in tax breaks for the production of fossil and renewable fuels ('Senate Approve Broad Energy Bill', *Washington Post*, June 29, 2005) and required electric utilities to source 10% of their supplies from renewable resources by 2020. However, on the same day, we also find an anti-CNOOC-takeover event as well as a CNOOC-takeover event. In fact, we classify it as an ambiguous event date (Table 2, Panel C). While the cumulative three-day residual returns were negative and statistically significant around this date (-0.49% for the oil and gas exploration portfolio and -0.61% for the oil refining portfolio), the magnitudes are relatively small compared to the market response to the anti-CNOOC-takeover events. In short, the conclusions of this paper are robust with respect to mistakes, if any, in classifying events and excluding some contemporaneous events.

7.2. Alternative methodology

It is possible that our estimates are biased because the portfolio returns on the oil and gas ADRs (R_{ft}) are endogenous. To resolve this issue, we adopt a different approach that does not include the portfolio returns on the oil and gas ADRs directly in the multifactor pricing model. Instead, we compare the average returns of the US oil stocks with that of the oil and gas ADRs, each by a multifactor pricing model. Specifically, we exclude the portfolio returns on the oil and gas ADRs from Eq. (1) and run the following regression model for each firm during the sample period:

$$R_{it} = \alpha_i + \beta_{oi}R_{ot} + \beta_{mi}R_{mt} + \varepsilon_{it} \tag{1'}$$

For each firm i, we obtain the coefficient estimates (i.e. $\hat{\alpha}_i, \hat{\beta}_{oi}$ and $\hat{\beta}_{mi}$) from the regression and use them to compute the daily residual stock returns ($\hat{\varepsilon}_{it}$) on every trading day during the sample period. Afterwards, we split the full sample into two groups by their SIC codes (oil refining vs. oil and gas exploration). Next, for each industry group, we compute the differences in the average daily residual returns between the US oil stocks and foreign oil and gas ADRs ($d\bar{\hat{\varepsilon}}_t$) on every trading day during the sample period as follows:

$$d\bar{\hat{\varepsilon}}_t = \frac{\sum_{i=1}^{M} \hat{\varepsilon}_{it,\text{US}}}{M} - \frac{\sum_{j=1}^{N} \hat{\varepsilon}_{jt,\text{F}}}{N} \tag{2'}$$

where $\hat{\varepsilon}_{it,\text{US}}$ denotes the abnormal return for the US oil stock i on day t and $\hat{\varepsilon}_{jt,\text{F}}$ for that of the foreign oil stock j on day t; and M and N are the number of US and foreign oil stocks, respectively, in the industry (oil refining or oil and gas exploration) under examination. In the end, we regress the differences in the average daily residual returns ($d\bar{\hat{\varepsilon}}_t$) on three event dummy variables as follows:

$$d\bar{\hat{\varepsilon}}_t = \alpha + \sum_{k=-1}^{+1} \gamma_k D_{k,t} + v_t \tag{3'}$$

where v_t is the random error on day t. Note that for any contemporaneous events which may have a similar impact on the US and foreign oil stocks, $d\bar{\hat{\varepsilon}}_t$ will likely be close to zero on the event date. Similarly, for events that have an impact on only the US stocks, $d\bar{\hat{\varepsilon}}_t$ will likely be different from zero on the event date.

Table 8

Robustness check (alternative methodology).

The corresponding *t*-statistics are in parentheses, based on the robust standard errors. Statistical significance is marked, at 1% ('***'), 5% ('**') and 10% ('*') levels.

	α_i	$\gamma_{i,-1}$	$\gamma_{i,0}$	$\gamma_{i,+1}$	$\sum \gamma_{i,k}$	R^2
Panel A. Anti-CNOOC-takeover events						
Oil and gas exploration industry	0.000	0.000	−0.011***	0.001	−0.010***	0.051
	(0.511)	(0.451)	(−0.113)	(0.511)	(−2.912)	
Oil refining industry	0.000	−0.005***	−0.004	−0.004	−0.014**	0.013
	(0.448)	(−0.869)	(−2.832)	(0.448)	(−2.464)	
Panel B. Ambiguous events						
Oil and gas exploration industry	0.000	−0.006	−0.004***	0.016***	0.005	0.026
	(0.051)	(40.541)	(−1.473)	(0.051)	(1.183)	
Oil refining industry	0.000	0.001	−0.010**	0.006***	−0.003	0.008
	(0.070)	(10.527)	(0.565)	(0.070)	(−0.497)	

This table presents the OLS regression of the difference in the average daily abnormal return between the US and foreign oil stocks in their respective industries (oil refining vs. oil and gas exploration) over the three-day window (day -1 to day +1) for the two types of takeover events: (i) Anti-CNOOC-takeover and (ii) ambiguous events. Denote $d\bar{\hat{\varepsilon}}_t$ the difference in the average daily abnormal return between the US non-merging and foreign oil stocks in their respective industries on day t and $D_{k,t}$ the binary variable that takes one during the three-day period around a given event date, t^*, and zero otherwise. For a given oil industry, the 3-day cumulative residual returns are computed by summing the coefficients γ_k over $k=[-1,+1]$ by using the following regression model:

$$d\bar{\hat{\varepsilon}}_t = \alpha + \sum_{k=-1}^{+1} \gamma_k D_{k,t} + v_t$$

Panel A of Table 8 presents the estimates from Eq. (3′) of the six anti-CNOOC-takeover events taken altogether for the oil and gas exploration industry and the oil refining industry. The results in Panel A are quantitatively and qualitatively identical to our main findings. The shares of the US oil firms reacted unfavorably to the political opposition. Over the three-day periods around the anti-CNOOC-takeover events, the market value of the US oil refining portfolio declined by an average of 1.4% ($t=-2.46$) more per event than that of the foreign oil refining portfolio. Similarly, the market value of the US oil and gas exploration portfolio declined by an average of 1% ($t=-2.91$) more per event than that of the foreign oil and gas exploration portfolio.

Panel B of Table 8 presents the estimates from Eq. (3′) of the two ambiguous events taken altogether for the oil and gas exploration industry and the oil refining industry. The results in Panel B are also quantitatively and qualitatively similar to our main findings. Therefore, our findings and conclusions are robust with respect to the possibility of containing endogenous variables.

8. Conclusion

Our empirical results provide convincing evidence that political animosity towards cross-border M&A could adversely affect the market values of domestic non-merging companies by lowering the expected takeover premiums facing these companies. In the case of CNOOC's aborted takeover of Unocal, the US oil and gas firms under our study lost nearly $59 billion in market value in the wake of the political opposition to the deal. While such opposition had substantially raised the costs for CNOOC in acquiring Unocal, it did not stifle the company's enthusiasm for pursuing other energy supplies worldwide. CNOOC has since signed several deals with companies and governments outside the US (e.g., Australia, Canada, and Nigeria) with an aggregate value in excess of $2.3 billion. In addition, the political opposition against CNOOC's attempted takeover of Unocal has discouraged cross-border M&A in the US oil and gas industry. Our findings indicate that, relative to the benchmark industry, cross-border M&A have dropped appreciably in the US oil and gas industry since the US Congress challenged CNOOC from attempting to take over Unocal.

Our study is timely and has policy implication regarding the recent ratification of FINSA. FINSA signals an increase in political animosity towards foreign investment in the US. Specifically, FINSA creates additional uncertainty for foreign acquirers as to whether cross-border M&A would be approved by the US government. Therefore, FINSA is a de facto political barrier to discourage cross-border M&A, particularly for those in the energy industry and industries involving critical infrastructure and technologies. More importantly, our findings indicate that this political barrier could harm US firms. This is because the share prices of US firms may weaken, reflecting a lower probability of being taken over by foreign acquirers.

Given the growing importance of cross-border M&A, we believe the economic impact of FINSA on the performances and economic values of domestic non-merging companies is a promising area of research. To the best of our knowledge, such research is seriously lacking. More importantly, we believe that the answers to these questions will help a government shape its national policy for cross-border M&A and therefore are worthy of future investigation.

Appendix A. Recent cross-border acquisitions by CNOOC

Date	Country	Description
April 20, 2006	Nigeria	CNOOC acquired a 45% working interest in an offshore oil mining license in Nigeria from South Atlantic Petroleum Limited ('SAPETRO') (approx. US$2.268 billion).
April 8, 2006	Canada	CNOOC signed an agreement with a Canada-based company, MEG Energy Corp, to acquire a 16.69% stake in MEG (approx. 150 million Canadian dollars).
April 3, 2006	Australia	CNOOC signed farm-in agreements with BHP Billiton and Kerr–McGee for exploration permits in the Outer Browse Basin of Australia.
January 27, 2006	Nigeria	CNOOC acquired a 35% working interest in a contract for an oil prospecting license in Nigeria (approx. US$60 million).
February 21, 2005	Morocco	CNOOC signed a joint study agreement with Office National de Recherches et d'Exploitations Pétrolières ('ONAREP'), a Moroccan national oil company, to assess the oil potential in the basins of Haha and Missour, Morocco.
January 25, 2005	Myanmar	Jointly with Singaporean Golden Aaron Pte Limited and the PRC-based HQCEC, CNOOC signed production sharing contracts with Myanmar Oil and Gas Enterprise ('MOGE').
December 18, 2004	Australia	CNOOC acquired an approximately 5.3% interest in certain production licenses, retention leases and an exploration permit of the NWS Gas Project, and a right to participate in future exploration undertaken over and above the proven reserves. (approx. US$528 million).
May 13, 2004	Indonesia	CNOOC acquired an additional 20.767% interest in the Muturi production sharing contract from BG Group (approx. US05.1 million).
April 2004	Morocco	CNOOC acquired from Vanco Energy Corporation an 11.25% interest in a petroleum agreement for Ras Tafelney in offshore Morocco (approx. US$7.75 million).
March 7, 2003	Kazakhstan	CNOOC acquired from BG an 8.33% interest in the North Caspian Sea Project in Kazakhstan (approx. US$615 million).
February 4, 2003	Indonesia	CNOOC acquired from BP an equivalent 12.5% stake in the Tangguh LNG project (US$275 million).
April 19, 2002	Indonesia	CNOOC acquired nine Repsol YPF S.A. subsidiaries owning working interests in five oil and gas properties in Indonesia (US$585 million).

This table lists major acquisitions by CNOOC from 2002 to 2006, in reverse chronological order. The acquisition events are taken from the press releases and CNOOC's annual reports posted on its website: http://www.CNOOCltd.com.

Appendix B. Details of sample US oil and gas companies

PERMNO	TICKER	Company name	Shares outstanding (million)	Market capitalization ($million)
88888	CEO	CNOOC LTD	8.50[#]	467.24[#]
14541	CVX	Chevron Corp New	2,098.22	114,877.55
14891	UCL	Unocal Corp	271.78	15,700.85
Industry: oil and gas exploration (SIC = 1311)				
88906	ATPG	Atp Oil and Gas Corp	28.97	622.48
76888	ABP	Abraxas Petroleum Corp	37.89	104.19
70332	APC	Anadarko Petroleum Corp	235.71	18,152.10
39490	APA	Apache Corp	328.19	19,645.39
89727	ARD	Arenaresources Inc	10.33	115.72
90180	ATLS	Atlas America Inc	13.33	423.19
76240	BJS	BJ Services Co	161.92	8,252.86
42358	BRN	Barnwell Industries Inc	2.72	170.92
11478	BRY	Berry Petroleum Co	21.17	1,063.54
90494	BBG	Bill Barrett Corp	43.39	1,350.20
89948	CKX	CKX Lands Inc	1.94	23.31
76082	COG	Cabot Oil and Gas Corp	48.92	1,630.11
84723	LNG	Cheniere Energy Inc	53.75	1,613.42
78877	CHK	Chesapeake Energy Corp	315.23	6,553.63
89509	XEC	Cimarex Energy Co	41.78	1,607.51
11644	CRK	Comstock Resources Inc	40.72	976.82
88871	MCF	Contango Oil and Gas Company	13.21	103.15
27677	CRED	Credo Petroleum Corp	6.04	93.08
90017	XTXI	Crosstex Energy Inc	12.76	578.67
82196	DNR	Denbury Resources Inc	56.76	1,834.52
87137	DVN	Devon Energy Corp New	471.68	22,145.38
88922	EAC	Encore Acquisition Co	32.87	1,242.78
90204	END	Endeavour International Corp	74.22	250.13
88817	EPL	Energy Partners Ltd	37.53	870.39
75825	EOG	EOG Resources Inc	239.25	12,342.86
37234	FST	Forest Oil Corp	60.64	2,451.72
88945	GMXR	GMX Resources	8.20	99.33

Appendix B (*continued*)

PERMNO	TICKER	Company name	Shares outstanding (million)	Market capitalization ($million)
38755	GEOI	Georesources Inc	3.73	44.53
57509	GDP	Goodrich Petroleum Corp	24.25	427.77
63562	GW	Grey Wolf Inc	190.86	1,250.13
40970	HEC	Harken Energy Corp	219.07	98.58
75734	HNR	Harvest Natural Resources Inc	37.64	414.41
32707	HP	Helmerich and Payne Inc	51.19	2,125.75
83991	THX	Houston Exploration Co	28.67	1,479.45
11887	KCS	KCS Energy Inc	49.82	722.34
89790	MPET	Magellan Petroleum Corp	25.78	33.00
80557	MMR	Mcmoran Exploration Co	24.63	460.60
68742	TMR	Meridian Resource Corp	86.59	403.52
89857	MXC	Mexco Energy Corp	1.73	14.75
79915	NFX	Newfield Exploration Co	126.40	4,964.91
34833	OXY	Occidental Petroleum Corp	398.25	29,793.23
87467	PYR	PYR Energy Corp	31.57	42.62
61218	PLLL	Parallel Petroleum Corp De	31.19	223.00
58675	PKD	Parker Drilling Co	95.74	562.93
61955	PVA	Penn Virginia Corp	18.71	788.44
75241	PXD	Pioneer Natural Resources Co	143.99	5,876.07
89636	PXP	Plains Exploration and Prod Co	77.40	2,492.28
46923	PNRG	Primeenergy Corp	3.39	72.27
86759	KWK	Quicksilver Resources Inc	50.54	2,752.80
50017	RRC	Range Resources Corp	81.60	2,002.46
77555	REM	Remington Oil and Gas Corp	28.49	897.85
66617	REXI	Resource America Inc	17.67	608.94
63765	SWN	Southwestern Energy Co	36.46	2,628.62
87254	SKE	Spinnaker Exploration Co	34.00	1,057.62
78170	SM	St Mary Land and Exploration Co	57.24	1,530.00
79444	SGY	Stone Energy Corp	26.87	1,192.40
66739	SFY	Swift Energy Co	28.33	994.77
87471	TGC	Tengasco Inc	48.76	10.73
76340	TPY	Tipperary Corp	41.37	193.59
63781	UNT	Unit Corp	45.86	1,830.65
76272	VPI	Vintage Petroleum Inc	66.79	1,893.38
90492	WRES	Warren Resources Inc	35.57	313.02
75888	WGR	Western Gas Resources Inc	74.23	2,485.83
89901	WLL	Whiting Petroleum Corp	29.79	1,041.23
38172	WOC	Wilshire Enterprises Inc	7.88	59.06
79212	XTO	X3TO Energy Inc	360.94	11,470.58
Industry: oil refining (SIC = 2911)				
28484	AHC	Amerada Hess Corp	92.32	8,809.91
13928	COP	Conocophillips	696.15	76,680.92
11850	XOM	Exxon Mobil Corp	6,365.74	363,801.76
56063	FTO	Frontier Oil Corp	27.40	1389.73
32803	HOC	Holly Corp	31.77	1235.69
25769	KMG	Kerr Mcgee Corp	115.10	8522.00
75444	LYO	Lyondell Chemical Co	246.07	6008.91
15069	MRO	Marathon Oil Corp	347.86	17,257.33
28345	MUR	Murphy Oil Corp	92.22	9190.15
89374	PCO	Premcor Inc	89.22	6164.14
14656	SUN	Sunoco Inc	68.84	7276.18
37284	TSO	Tesoro Corp	68.06	3044.19
85269	VLO	Valero Energy Corp New	256.73	18,305.06

PERMNO and TICKER are the CRSP-specific permanent number and ticker symbol for the securities. The shares outstanding and market capitalization of the securities are measured by the closing price and shares outstanding as of June 1, 2005.
[#] This figure does not include shares issued outside the US stock markets.

Appendix C. Details of sample oil and gas ADRs

PERMNO	TICKER	Company name	Shares outstanding (million)[#]	Market capitalization ($million)[#]
Industry: oil and gas exploration (SIC = 1311)				
88391	CNQ	Canadian Natural Resources Ltd	536.66	16,067.88
89507	SNG	Canadian Superior Energy Inc	109.87	187.87
82196	DNR	Denbury Resources Inc	56.76	1,834.52

Appendix C (*continued*)

PERMNO	TICKER	Company name	Shares outstanding (million)[#]	Market capitalization ($million)[#]
89134	ECA	Encana Corp	882.50	31,258.18
88869	EENC	Enterra Energy Corp	25.43	496.57
33099	IMO	Imperial Oil Ltd	345.89	24,775.88
90339	IOC	Interoil Corp	28.88	742.24
88537	IVAN	Ivanhoe Energy Inc	199.91	437.81
90113	JDO	JED Oil Inc	9.52	169.40
30277	NXY	Nexen Inc	260.21	6,994.36
87540	PZE	Petrobras Energia Participac S A	26.56	331.17
87844	PTR	Petrochina Co Ltd	27.74	1,806.28
85552	PKZ	Petrokazakhstan Inc	74.60	2,138.67
88490	PBR	Petroleo Brasileiro Sa Petrobras	174.40	8,344.57
75632	REP	Repsol Ypf S A	35.12	882.09
25267	RD	Royal Dutch Petroleum Co	516.08	30,128.52
68815	STOSY	Santos Limited	2.71	84.78
89016	STO	Statoil A S A	40.52	729.36
80070	SU	Suncor Energy Inc	455.94	18,219.20
85635	TLM	Talisman Energy Inc	367.23	12,331.62
77078	TOT	Total S A	86.73	9,711.47
88882	UPL	Ultra Petroleum Corp	152.87	4,144.25
79362	YPF	Y P F Sociedad Anonima	224.03	11,750.48
Industry: oil refining (SIC = 2911)				
85898	TNT	AO Tatneft	24.61	859.84
29890	BP	BP PLC	1,169.91	71,446.40
88660	SNP	China Petro and Chemical Corp	21.42	766.48
85446	EON	E on AG	38.93	1,128.49
69606	NHY	Norsk Hydro A S	9.17	756.44
82232	PCZ	Petro Canada	259.84	14,808.40

PERMNO and TICKER are the CRSP-specific permanent number and ticker symbol of the ADRs. The shares outstanding are the total shares listed in the US stock markets in the form of American Depository Receipts (ADRs) as of June 1, 2005. The market capitalization is computed by multiplying the closing price with shares outstanding of the ADR as of June 1, 2005.

[#] This figure does not include shares issued outside the US stock markets.

Appendix D. Details of cross-sectional tests

Throughout this appendix we use the following notations:

N	number of individual firms,
R_{it}	security i's return on day t,
R_{ot}	crude oil price return on day t,
R_{ft}	return on an equally weighted portfolio of ADRs that have the same SIC code as security i on day t,
A_{it}	security i's residual return on day t,

$\sum\limits_{t=-1}^{+1} A_{it}$ security i's cumulative three-day residual return surrounding the event day,

SR_{iE} security i's standardized residual returns on the event day, A_{iE}/forecast standard error of security i on the event day,[16]

$\sum\limits_{t=-1}^{+1} SR_{it}$ security i's cumulative three-day standardized residual return surrounding the event day,

For each US oil firm in our sample, we apply the standard event study methodology, as described in Boehmer et al. (1991). Using data in the estimation window (120 days prior to the day before the first anti-CNOOC-takeover event),[17] for each firm, we run a regression based on the following multifactor pricing model:

$$R_{it} = \alpha_i + \beta_{oi}\beta_{ot} + \beta_{mi}R_{mt} + \beta_{fi}R_{ft} + \varepsilon_{it}.$$

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[16] To simply notations, we drop the index for security i in the following discussion. Let $\boldsymbol{X}_t$ be a column vector ($K \times 1$) consisting of 1, R_{ot}, R_{mt} and R_{ft}; $\boldsymbol{X}$ be a $T \times K$ matrix consisting of T rows of the transpose of $\boldsymbol{X}_t$ in the estimation window. The forecast standard error of A_E, i.e. the residual return on the event date, is $\mathrm{Var}(A_E) = s^2[1 + X_E(X'X)^{-1}X_E]$, where $s^2 = \sum_{t=1}^{T} A_t^2/(T-4)$. DeSalvo (1971) provides a discussion about the forecast standard error in multiple regression framework (as in our multifactor pricing model).

[17] We check the robustness of our results with respect to the length of estimation window. The results based on estimation window of 90 days and 150 days prior to the first anti-CNOOC-takeover event remain quantitatively and qualitatively similar to those based on the 120-day estimation window.

Next, for each firm, we compute its one-day residual return (i.e. $A_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_{oi}R_{ot} + \hat{\beta}_{mi}R_{mt} + \hat{\beta}_{fi}R_{ft})$), its cumulative three-day residual return (i.e. $\sum_{t=-1}^{+1} A_{it}$), and their corresponding forecast standard errors around each of the six anti-CNOOC-takeover event date. Three tests are then performed.

(1) The ordinary cross-sectional test

This test uses the cross-sectional standard deviation estimated during the event period for its *t*-test. The resulting *t*-statistics

for the one-day residual return is $\frac{1}{N}\sum_{i=1}^{N} A_{it} \Big/ \sqrt{\frac{1}{N(N-1)}\sum_{i=1}^{N}\left(A_{it} - \sum_{i=1}^{N}\frac{A_{it}}{N}\right)^2}$ and the cumulative three-day residual return is

$\frac{1}{N}\sum_{i=1}^{N}\sum_{t=-1}^{+1} A_{it} \Big/ \sqrt{\frac{1}{N(N-1)}\sum_{i=1}^{N}\left(\sum_{t=-1}^{+1} A_{it} - \sum_{i=1}^{N}\frac{\sum_{t=-1}^{+1} A_{it}}{N}\right)^2}$.

(2) The standardized cross-sectional test

The *t*-statistics for the one-day residual return is $\frac{1}{N}\sum_{i=1}^{N} SR_{it} \Big/ \sqrt{\frac{1}{N(N-1)}\sum_{i=1}^{N}\left(SR_{it} - \sum_{i=1}^{N}\frac{SR_{it}}{N}\right)^2}$ and the cumulative three-day

residual return is $\frac{1}{N}\sum_{i=1}^{N}\sum_{t=-1}^{+1} SR_{it} \Big/ \sqrt{\frac{1}{N(N-1)}\sum_{i=1}^{N}\left(\sum_{t=-1}^{+1} SR_{it} - \sum_{i=1}^{N}\frac{\sum_{t=-1}^{+1} SR_{it}}{N}\right)^2}$.

(3) Wilcoxon Signed Rank Test

The Wilcoxon signed rank statistic W_+ for the one-day residual return is computed by ordering the absolute values $|A_{1E}|, |A_{2E}|,\ldots,$ $|A_{NE}|$, the rank of each ordered $|A_{iE}|$ is given a rank of $Rank_i$. Denote $\varphi_i \equiv I(A_{iE} > 0)$, where $I(.)$ is an indicator function. The Wilcoxon signed ranked statistic W_+ is defined as

$$W_+ = \sum_{i=1}^{N} \varphi_i Rank_i$$

Similarly, to compute the Wilcoxon signed rank statistic W_+ for the cumulative three-day residual return, for each firm, we replace A_{iE} by $\sum_{t=-1}^{+1} A_{it}$ in the above procedure.

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