

The Determinants of Mergers and Acquisitions in the Oil & Gas Industry:
Evidence from Canadian and American Transactions

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A Thesis

In

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Administration (Finance Option) at
Concordia University
Montreal, Quebec, Canada

June 2014

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CONCORDIA UNIVERSITY

School of Graduate Studies

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and submitted in partial fulfillment of the requirements for the degree of

Master of Science in Administration (Finance Option)

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ABSTRACT

The Determinants of Mergers and Acquisitions in the Oil & Gas Industry:
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The study investigates the determinants of mergers and acquisitions in the oil and gas industry over the ten-year period from 2002 to 2011. Our large sample analysis results indicate that in the O&G industry: (1) U.S. acquirers are larger than Canadian acquirers overall; (2) value bidders generate greater abnormal returns relative to glamour bidders in Canadian market; (3) the geographical proximity of headquarters cannot generate pronounced synergies, and even destroys penny stock bidder's value; and (4) there is no mispricing effect in the penny stocks, but they are more illiquid and have a higher level of idiosyncratic risk. We also examine three cases in 2012-2013 to verify our results and to identify several firm specific factors that are not considered in the large sample analysis. Consistent with our expectations, the Canadian transaction is more straightforward whereas the U.S. transactions depend more on pre-existing connections between the firms and suggest more corporate governance concerns.

ACKNOWLEDGEMENTS

I would like to express my deep appreciation to the following individuals:

-My supervisor, Dr. Sandra Betton, who supervised me in serious and professional attitudes, helped me with rich experiences in corporate finance, encouraged me by patient, instructed me to discover my research interests. I greatly appreciate her valuable supports and enjoy the time we worked together.

-My committee members, Prof. Nilanjan Basu and Prof. Saif Ullah, who gave me precious suggestions which helped me to improve this thesis.

-My dear parents and friends who are always by my side and bring me positive energy.

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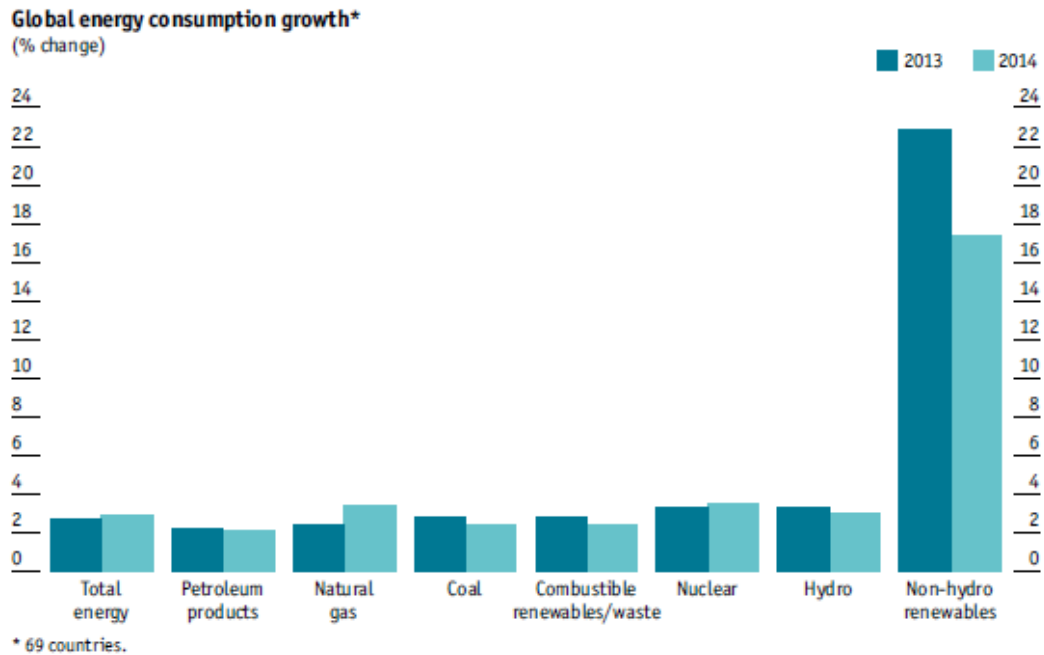
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1. Introduction

Figure 1: The estimated global energy consumption growth in percentage change over one year period



Reprint from: *Special report: Industries in 2014 (2013)*. The Economist Intelligence Unit.

The fabric of the energy sector is changing rapidly worldwide. Coal is used less and less; wind and solar power are expanding fast.¹ The oil and gas industry, the traditional energy industry, is facing great challenges. On one hand, the U.S., the largest consumer of oil in the world and Canada’s key client, is seeking a diminished dependence on net oil imports. On the other hand, new customers are appearing in Asia, with China becoming the second largest oil consumer

¹ The estimated consumption of petroleum and other liquids is 35.87 quadrillion British thermal unit (Btu) per year, whereas the estimated consumption of non-hydro renewable energy (the sum of other renewable energy and other) is 2.36 quadrillion Btu per year from EIA’s Annual Energy Outlook 2014. The estimated U.S. GDP annual growth is 1.9% in 2013 and 2.1% in 2014 from Global Economic Prospects (June 10, 2014).

worldwide. In order to win new clients, both Canadian and American oil and gas firms are seeking to lower their production costs and improve their transportation capability. (The Economist Intelligence Unit., 2013A, 2013B, 2013C, 2013E, 2013G)

However, the new projects in the oil and gas industry are always the heart of the matter because many large companies and government decisions are involved. Recently, a heated debate about economic benefits and environmental controversy was triggered over “Petrobec” and the proposed Keystone XL pipeline. (The Economist Intelligence Unit., 2013D, 2014A, 2014B) There will be other problems about the new projects even after government approval. Take liquefied natural gas (LNG) as an example, a gas glut appeared after the Canadian government approved 7 new projects and the U.S. government approved 4 new projects, leading to a low gas price. (The Economist Intelligence Unit., 2013F) While government approval and strict investigations are required for a new project, mergers and acquisitions based on existing properties are relatively quicker and easier and appear to be more profitable. The unconventional oil and gas, such as oil sand, shale oil and shale gas, is bringing a revolution to the entire industry. Firms from various regions have a chance to integrate resources by conducting mergers and acquisitions.

There are several unique characteristics in this industry. First of all, while the value of an O&G firm is largely dependent on the properties and working interests it owns, a value firm with lower market to book ratio is expected to benefit the investors more since several papers, such as Rau and Vermaelen (1998) and Bloomfield and Michaely (2004), indicate that a higher market to book ratio is usually accompanied by overestimation of the past performance of a firm. In turn, we should observe that the value acquirer outperform the glamour acquirer in M&As.

Moreover, oil and gas are commodities and it is relatively simple to integrate the production after M&As. Therefore, synergies gains can be more easily identified. The headquarters of the oil and gas firms are generally clustered in specified cities and regions. The geographical proximity of headquarters will promote the spread of soft information, resulting in a higher synergy. Yet, the cost reduction is subject to the geographical proximity of properties. Furthermore, idiosyncratic risk, target public status, method of payment and macro economy are also expected to have impacts on M&As in the oil and gas industry.

In this paper, we explore the determinants of mergers and acquisitions in the oil and gas industry via both a large sample analysis and three out-of-sample case analyses. In addition, case studies help us to highlight several unique characteristics, such as toehold structure and collar consideration structure, in different transactions.

In order to get a better understanding of mergers and acquisitions in the oil and gas industry in the United States and Canada, we examine a ten-year sample, from 2002 to 2011, of mergers and acquisitions, extracted from Thomson Financial's Security Data Corporation (SDC) Platinum database. We set the beginning of our sample in 2002 as the fifth merger wave ended after a recession in 2001 (Gaughan (2010) and Lipton (2006)). During the fifth merger wave, investors were seeking cross-border deals. Several of those were accompanied by corporate governance problem and dot-com bubble. We have attempted to observe the motivations of modern mergers and acquisitions under a relatively sound corporate governance environment.

The other important reason is that qualified combined firms could select different accounting methods for a merger before 2002, either the pooling-of-interest method or the purchase method. Those two competing accounting

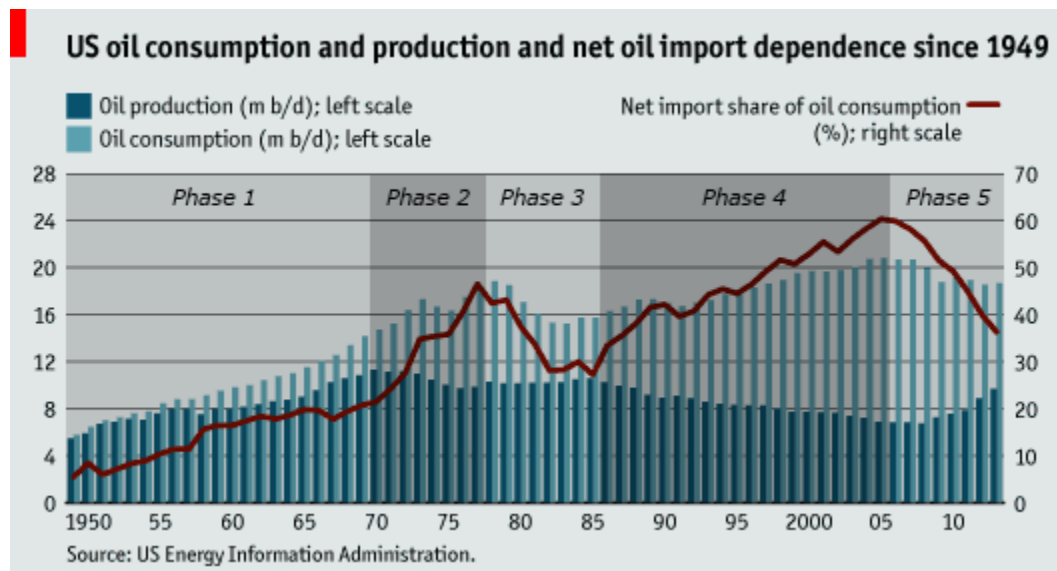
methods would lead to distinct net income and cash flow for the same merger (Misund et al. (2008)). Specifically, the purchase method would decrease the initial net income but increase the future net income because of tax deductible depreciation. So, the earnings per share were depressed in purchase method. It would have an impact on manager's decision if the compensation of that manager is based on earning (Carleton et al. (1983)). Carleton et al. (1983) also explained that only an exchange of stock had the possibility to be classified as pooling when it met twelve specific conditions set forth in APB Opinion Number 16. Although it was not easy to qualify as pooling, one of the largest mergers in the oil and gas industry, ExxonMobil deal from 1998 to 1999, was structured on a pooling of interests basis. Since the pooling method is no longer used, we start our sample from 2002. Accordingly, by starting our sample in 2002, we do not need to consider the effect of the choice of accounting methods on M&As in the oil and gas industry.

We end our sample in 2011 due to the limited access to Canadian Financial Markets Research Centre (CFMRC) database. But the ten-year time interval is long enough to encompass both upward and downward trends in oil price. An event study is employed to observe the M&As' effect on acquirers' performance, followed by two logistic regressions. The first one is used to model the probability of deal completion and the second one is used to test whether there is an illiquidity issue among low-priced stocks. Several multivariate regressions are used to evaluate the relationship between different factors on the acquirer's abnormal return.

Finally, three out-of-sample case studies, one from Canada and two from the United States occurring between 2012 and 2013, are conducted to provide an in-depth examination of M&A motivations and connections between firms following the approach of Aktas et al. (2013). We examine recent deals in order to evaluate

our conclusions from our large sample model. In spite of each case being unique, it is important to examine individual cases as we can discover firm specific details missed in the large sample, which makes our study more empirical. For instance, we are able to inspect the production information and interconnections between participating firms in each case. Also, our case studies offer us some insights into the role of M&As in reorganization and corporate governance. Many connections among firms and relationships between managements are discovered in the case study. The awareness of those interrelationships can help us to have a better understanding of the real world of M&As. It is not merely about the abnormal return in the short term.

Figure 2: The dependence trend of US net oil import since 1949



Reprint from: *US: Data focus - It's oil history* (2013, October 29). The Economist Intelligence Unit.

This paper also contributes to the literature on mergers and acquisitions in the Canadian market. The United States has been targeted as the traditional customer of Canadian oil and natural gas products for many years. The net oil import

dependence, however, has changed a lot during the past decades: demand declined and production expanded in the United States. As presented in Figure 2, the US net oil import dependence reached the peak in 2005 and dropped during the economic crisis period which is attributable to the decreasing demand. Despite the demands recovery after the crisis, the oil import dependence has diminished because of the development of unconventional oil and gas sources within the U.S.

This shift in U.S. demand has forced Canada to expand its export market beyond the North America in order to grow into an energy superpower. We hypothesize that the Canadian oil and gas firms will conduct more cross-border deals as an approach to increase their market share overseas. Furthermore, the bargaining power of the Canadian hydrocarbon industry is limited as it usually price the crude oil according to the WTI price, although Canada has the 3rd largest proven oil reserves and is the 6th largest oil producer. Consequently, we expect that the overall abnormal return gained from the oil and gas M&As in Canada is less compared with the United States. Moreover, there is an environmental concern over extraction techniques of Canadian oil sands, which constrains the development of unconventional oil and gas. As a result, the deal volume in Canada may be lower than which in the U.S.

Nevertheless, we know that the Canadian firms did well in the past. For instance, Eckbo (1986) found acquirers and targets listed on the Toronto Stock Exchange earn a significant excess return on average. Then, he supported the productive efficiency theory about horizontal mergers in both U.S. and Canada, and the Canadian acquirers perform even better in non-horizontal mergers. In addition, Eckbo and Thorburn (2000) found that Canadian bidder outperformed American bidders in Canadian domestic merger. Andre et al. (2004), in contrast, suggested that the post-performance of the Canadian bidders is not good; especially they observed a significant underperformance of the glamour firms.

Thus, it is valuable to take a look at how Canadian market is functioning. Furthermore, not many papers published after 1980s focus on the oil and gas industry. The lasting impression of the O&G industry was made by a few of classical papers such as Jensen (1986), Shleifer and Vishny (1988). The industry structure and macro economy, however, are distinctive from 1980s. Most of current papers on M&As in the oil and gas industry focus on the impact of the accounting fundamentals, especially in case studies such as Weston (2002), Neubecker and Stadler (2003), Salama et al. (2003). This thesis brings us some new ideas regarding the firm and deal characteristics of M&As in the oil and gas industry by focusing on the market impact of different deal characteristics.

The organization of the paper is as follows: literature review and hypotheses are stated in the next section. The third section presents the fabric of global market in the oil and gas industry and provides our data collection procedure. The methodology is described in the fourth section. The fifth section discusses our results and the sixth section considers alternative event windows. The three case studies are reported in section seven. Conclusion and further research are in sections eight and nine.

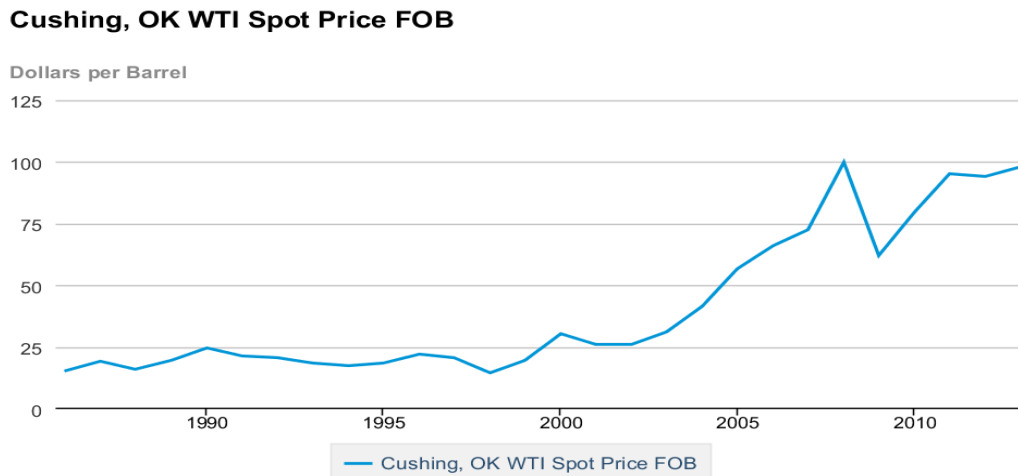
2. Literature Review and Hypotheses

The common view of the oil and gas industry emerged after several classical papers published in 1980s. The O&G firm has been portrayed as a cash flow machine which will undertake overinvestment and fail in diversification programs, and is associated with a severe corporate governance problem. Jensen (1986) explained the free cash flow theory via several takeover examples in the oil industry. He also referred to, McConnell and Muscarella (1986) and Picchi (1985), to support his statement that the Exploration and Development (E&D) expenditure does not bring extra return to the shareholder. Shleifer and Vishny

(1988) hypothesized that non-value-maximizing M&As in the oil and gas industry were conducted due to a lack of internal control. However, that is only part of the story.

We cannot ignore the fact that the crude oil prices surged from 1973 to the late 1970's (Jensen (1986)) and that the oil and gas industry accumulated great wealth throughout a consistent and steady growth during the seven-year interval. This is the cause of the large amount of free cash flow existing in the oil and gas companies during 1980s. Although there is a surge of crude oil prices in our sample period as shown in Figure 3, it only lasted for roughly three years and became rather volatile after the economic crisis in 2008. Given the very different oil price experienced in the 2000's, we expect to observe different deal characteristics and consequences in our sample compared to those in 1980s.

Figure 3: The historical WTI Crude Oil Spot Price from 1986 to 2014



Source: U.S. Energy Information Administration.

Three main motivations of mergers and acquisitions are mentioned in the existing literature. First, value maximization drives M&As, in spite of the concern about the agency problem that “bad” managers will maximize the firm size by over expansion which would hurt shareholder’s welfare. Malatesta (1983) observed that acquiring firms suffered a wealth loss in both short-term and long-term before the approval of the merger. However, Moeller et al. (2005) found that a small portion of large loss deals would destroy the acquiring firm shareholders’ wealth. A value maximizing firm will invest in a project which can increase its market power, or in other words, generate positive net present value. Asquith et al. (1983) provided evidence that the acquiring firm’s CAR is significantly positively related to the relative size² of the target and the bidder in general, which supported the value maximizing hypothesis. Apart from increasing market power, Neubecker and Stadler (2003) suggested that the combined firm has more financial power so that it could seek more investment possibilities. Moreover, they stated that the political influence of the acquirer firm improves by obtaining more lobbying power. Privately owned acquirers (opposite to Government-owned corporations) with stronger political influence could have a better access towards the developments and constructions of the pipelines which is crucial for the oil and gas company. Weston et al. (1999) added that the antitrust concern does not play a role in the oil and gas transactions by examining the change of Herfindahl-Hirschman Index (HHI) after the five major mergers completed in the United States petroleum industry. Their result suggested that the HHI is far from the critical level even after the mergers, since the oil and gas industry is large enough to digest the effect of mergers initiated by large firms. The industry report from IBISWorld also suggested the market share concentration is low in the oil and gas

² The relative size equals the target’s market value divided by the bidder’s market value.

exploration industry. All in all, we expect that the large target contributes more to the acquirer's CAR in the oil and gas industry, leading to our first hypothesis.

Hypothesis 1: The target size will be positively related to acquirer's performance at the deal announcement.

Geographical proximity, the second motivation, will generate higher acquirer return based on Uysal et al. (2008). First of all, cost will be reduced when acquirer and target are close to each other, so synergy gain could be higher by sharing common facility and human resources better. Secondly, the transmission of information is more transparent in local deals. Specifically, soft information can help acquirer to identify less obvious synergies and to increase the possibility of winning the bid. Kang and Kim (2008) developed the explanation of this local bias from another perspective: they found that block acquirers³ show strong preferences for geographically proximate targets. Geographically proximate acquirers would take more active corporate governance actions towards targets after acquisitions, because the monitoring costs, such as communication cost and governance-related transaction cost, tend to decrease if targets are closer to acquirers. Notably, those two papers defined the local deal based on the distance between acquirer and target's headquarters. The headquarters of the oil and gas firms traditionally cluster in several cities such as Oklahoma City, the United States or Calgary, Canada. The cost synergy may be more influenced by the actual distance between properties in the oil and gas M&As. However, due to data limitations, we will stay in line with previous literature in hypothesis 2 and focus on the geographical proximity of headquarters. We will examine the role of property proximity in the case studies.

³ The block acquirer initially hold less than 5% of the target's shares and then purchases more than 5% but less than 50% of the target's shares.

Hypothesis 2: The geographical proximity of acquirer and target will be positively related to the acquirer's performance at the deal announcement.

Almazan et al. (2010) presented that firms located in the industry cluster⁴ usually maintain lower leverage and higher cash flow. Higher growth opportunities synchronize with severe competitions in the industry clusters. In order to seize the acquisition opportunities, acquirers located in the industry cluster need sufficient capital to demonstrate their buying power. Namely, they have strong currency to complete the deal. Since the geographic concentration is a nature of the oil and gas industry, it is easily to have our third hypothesis.

Hypothesis 3: Acquirers who have lower leverage will perform better within industry cluster.

The last common observation is that a horizontal merger usually contributes positively to the bidder's cumulative abnormal return. By studying challenged horizontal merger, Eckbo (1983) found that the bidders, targets and rivals in challenged mergers (by the Federal Trade Commission or the Antitrust Division of the Justice Department) performed better due to the potential of cost-savings, whereas the non-challenged horizontal merger does not have a significant contribution to bidder's CAR. In later research, Eckbo (1986) found that there is no significant distinction between Canadian horizontal and non-horizontal M&As. However, Fee and Shawn (2004) found significantly positive abnormal returns of American bidders at deal announcement, originating from the development of productive efficiency and the improvement of buying power (also see DeLong (2001)). Seth (1990) argued that related acquisition does not outperform unrelated acquisition on average in both the CAR measure and synergy score measure. Two

⁴ The industry cluster is made up of interconnected firms and institutions which are geographically concentrated in particular locations.

different typologies, the Federal Trade Commission (FTC) and the Porter, were used in her analysis and led to the same results. She commented that the source of synergy varies in different types of acquisitions. From the views above, we know that the country difference and the different typologies of horizontal, vertical and unrelated merger will have a strong impact on the sign and significance level of bidder's CAR. As we specify one industry in our study and firms in this industry seldom conduct unrelated deals, we anticipate an insignificant correlation between the acquirer's CAR and the horizontal transaction but we will include it in the logistic regression as a control variable.

We add the market to book ratio also as a control variable in order to capture the effect of acquirer's performance before the deal announcement. Fama and French (1992) found a positive relationship between book to market ratio, a measure of the distress risk, and the expected stock returns (also see Lewellen (1999)) and established their famous three-factor model by recognizing the book to market ratio as a common risk factor. Alternatively, Rau and Vermaelen (1998) argued that a high market to book ratio is originally from the overestimate the past performance of the glamour firm. They found a long-term underperformance of bidders with high market to book ratio. Griffin and Lemmon (2002) also found that the group of high O-score⁵ firms includes more firms with high market to book ratio, which suggested that there is a mispricing problem. In addition, Bloomfield and Michaely (2004) surveyed 25 senior analysts with a mean working experience of 9.8 years and reported that the firm with higher market to book ratio received significantly lower expected returns and were considered to be riskier and overpriced. As noted, we believe that higher market to book ratio indicates larger possibility of overpricing, which leads to hypothesis 4.

⁵ O-score is a proxy of distress risk. A higher O-score indicates a higher likelihood of bankruptcy.

Hypothesis 4: The market to book ratio will be negatively related to acquirer's performance at the deal announcement.

We also hypothesize size and geographic proximity effects are positively associated with the deal completion rate. And a value firm with lower market to book ratio will have a higher probability of completing the transaction. In addition, we assume that penny stocks will have a lower deal completion rate.

Hypothesis 5: A lower MB ratio of acquirer, acquiring larger target, conducting a local deal, making a horizontal merger or a non-penny stock acquirer will raise the probability of deal completion.

It is essential to examine whether there is an illiquidity issue with respect to penny stocks. We need to separate the penny stocks if they are more illiquid stocks since their lower trading frequency will reduce accuracy of our estimation. Moreover, the low-priced firms are expected to have higher idiosyncratic risk. Morck et al. (2000) found a higher level of stock return synchronicity in the emerging markets due to the lack of protection of firm's private information. Namely, firms with more revelation of private information have lower idiosyncratic volatilities. It is easier for low-priced firm to keep firm-specific information from the public since they receive relatively less analyst coverage, which lead to our sixth hypothesis.

Hypothesis 6: The likelihood of being a penny stock is positively correlated with illiquidity and idiosyncratic risk after controlling for acquirer's market to book ratio and leverage.

The idiosyncratic risk will be related to the uncertainty of acquirer's performance, especially in deals involving stock payment. In addition, Ferreira and Laux (2007) found that firms with fewer antitakeover provisions face more

idiosyncratic risk. In particular, the risk is significantly negatively correlated with GIM index⁶, a measure of corporate governance. So, we expect that the idiosyncratic risk of acquirers will decrease their CAR in hypothesis 7.

Hypothesis 7: The idiosyncratic risk will be negatively related to the acquirer's performance at the deal announcement.

Some factors that could affect acquirer's performance after the deal announcement are also taken into consideration. There is substantial evidence that takeover premiums both for bidders and targets are highly related to the payment method. In studies of U.S. market, Jensen (1986) predicted that the payment of cash and debt is expected to benefit acquirers compared with stock exchange. Travlos (1987) supported Jensen's hypothesis. He found that offers involving stock payment, on average, result significant negative abnormal returns relative to cash payment. However, the impacts may differ in different nations. Eckbo et al. (1990) found that Canadian bidders who paid by a mixture of cash and stock gained a higher premium. Therefore, we get the eighth hypothesis:

Hypothesis 8: The stock payment will be negatively related to the U.S. acquirer's performance after deal announcement, whereas the combined payment will be positively related to Canadian acquirer's performance at the deal announcement.

The public status of target is hypothesized to influence the market expectation towards the deal. Officer (2007) found an average acquisition discount for private targets and subsidiaries of 15% to 30% compared to comparable public targets. The acquirer is assumed to bid lower due to the uncertainty of target-valuation

⁶ The GIM index is invented by Gompers, Ishii and Metrick in their NBER Working Paper No. 8449. This index contains 24 different provisions related to corporate governance. A higher GIM index indicates a poorer corporate governance.

and constraint on target’s corporate liquidity. Under such conditions, market would react positively towards private acquisition. Accordingly, we would expect a positive acquirer cumulative abnormal return if the target is private, shown in hypothesis 9.

Hypothesis 9: Acquirers who purchase private targets will gain greater CAR after controlling for size difference, acquirer’s market to book ratio, and geographical proximity.

3. Data

3.1. Global Market Structure

The initial sample consists of all M&As related to the oil and gas industry regardless of country between 2002 and 2011 as recorded in the SDC database, in order to have an overall view of M&A activity during the ten-year time period in the hydrocarbon industry. In this sample, our two screens are the availability of the deal value and that at least one of the firms in the mergers is from the oil and gas industry sector. There are 2,533 mergers conducted by the U.S. bidders out of a total of 9,598 mergers. The construction of our initial sample is shown in Tables 1 and 2.

Table 1: Top 5 Industry Sector

This table exhibits the most active acquirer and target industries of oil and gas M&As between 2002 and 2011. We separate our initial sample into two parts. Panel A contains 8,024 deals in which targets are from the oil and gas industry and reports the top 5 acquirer industries. Panel B contains 6,736 deals in which acquirers are from the oil and gas industry and reports the top 5 target industries. Notably, we count the number of O&G target and the number of O&G acquirer based on deals. Since our initial sample contains all forms of deal, including acquisition of assets, it means a single firm can be counted more than once if it shows in several transactions.

<i>Panel A: Who Buys O&G Targets?</i>		
Acquirer's Industry Sector	No. of O&G Target	%
Oil and Gas; Petroleum Refining	5162	64%
Investment & Commodity Firms, Dealers, Exchanges	1532	19%
Electric, Gas, and Water Distribution	262	3%
Mining	254	3%
Business Services	106	1%
Total Number of O&G Target	8024	

<i>Panel B: Who Do O&G Acquirers Buy?</i>		
Target's Industry Sector	No. of O&G Acquirer	%
Oil and Gas; Petroleum Refining	5162	77%
Electric, Gas, and Water Distribution	310	5%
Mining	272	4%
Business Services	158	2%
Chemicals and Allied Products	108	2%
Total Number of O&G Acquirer	6736	

For those who buy the oil and gas firms or assets, 19% of acquirers are from the investment and commodity industries, while 64% of acquirers are from the oil and gas industry (Table 1 Panel A). This indicates that some firms from other industry tend to invest in the oil and gas industry. In Table 1 Panel B, we see that 77% of the oil and gas firms choose to invest in targets from same industry as themselves. The other four industries from the top-five target industries of the oil and gas firms are “electric, gas, and water distribution”, “mining”, “business services”, and “chemicals and allied products”, all of which display a strong relationship towards the oil and gas industry. For example, they acquired natural gas transmission and distribution companies which belong to “electric, gas, and water distribution” and subsidiaries of the oil and gas firms which belong to “business services”. We could know that the acquirers from the oil and gas industry prefer to make a horizontal transaction rather than conduct a conglomerate deal, which remains the same if we only consider merger and acquisition of majority interest. Note that the preference of horizontal M&As varies from country to country and over years. Eckbo (1992) found that the oil and gas extraction industry has a higher frequency of horizontal mergers during 1963 to 1981 in the United States, 81.6%, than the average, 73.7%. As for the Canadian market in the same period, the number of the O&G industry, 68.6%, is outstanding from the average, 56.6%. (See Appendix A.1 for reprint of table). Our result is consistent with Eckbo (1992).

Table 2: Top 5 Nation Sector

This table exhibits the most active nation where the oil and gas M&As happened over the period 2002-2011. We separate our initial sample into two parts. Columns 2 and 3 shows top 5 acquirer nation among 6,736 deals in which acquirers are from the oil and gas industry. Columns 4 and 5 shows top 5 target nation among 8,024 deals in which targets are from the oil and gas industry. Notably, we count the number of O&G target and the number of O&G acquirer based on deals. Since our initial sample contains all forms of deal, including acquisition of assets, it means a single firm can be counted more than once if it shows in several transactions. In addition, the deal may or may not be domestic since a Canadian bidder does not necessarily acquire a Canadian target.

Number of Deals	Acquirer Nation	%	Target Nation	%
Canada	2083	31%	2291	29%
United States	1953	29%	2501	31%
Australia	509	8%	644	8%
United Kingdom	412	6%	322	4%
China	241	4%	209	3%

Table 2 reveals that both top 5 acquirer and target nations are United States, Canada, Australia, United Kingdom, and China, meaning that 1 of the participants (the acquirer or the target) is from the countries mentioned above. It is mainly because those countries have abundant natural resources. The Middle East, a region rich in oil, does not appear as it encompasses many small countries. The reason Russia does not appear in our top-five is that its M&A activity has dramatically increased in the past two years. We focus on the 6,736 transactions where the acquirers are from the oil and gas industry.

Table 3: Form of Deal Made by O&G Acquirer

This table reports the deal forms in the subsample which only contains deals conducted by O&G acquirer. Notably, we count the number of acquirer and target based on deals. Since our subsample contains all forms of deal, including acquisition of assets, it means a single firm can be counted more than once if it shows in several transactions.

Form of Deal	Number of Deals	%
Merger	1703	25%
Acq. of Majority Interest	778	12%
Acq. of Remaining Interest	269	4%
Acq. of Partial Interest	119	2%
Acq. of Assets	1146	17%
Acq. of Certain Assets	2211	33%
Acquisition	2	0%
Buyback	503	7%
Exchange Offer	5	0%

Table 3 indicates that only 37% of deals are mergers and acquisitions of majority interest, whereas 50% of deals are assets acquisition (the sum of Row 5 and Row 6). During our sample period, 2002-2011, there are 189,693 transactions from all industries with available deal value in the SDC database. Twenty nine percent of them, 54,895 transactions, are asset acquisitions. So, we could infer that certain properties will be more appealed to the oil and gas investors. We focus on the transactions involving a change of corporate control in order to test the synergy gains at the corporate level. Therefore, we only include mergers and acquisitions of majority interest, 2,481 transactions, in our next table.

Table 4: Public Status of Acquirer and Target in Deals Made by O&G

Acquirer

This table shows the public status of both acquirer and target in the subsample which only contains mergers and acquisitions of majority of interest conducted by an O&G acquirer. Notably, we count the number of acquirer and target based on deals. A single acquirer can be counted more than once if it shows in several transactions.

	Number of Deals			
	Acquirer	%	Target	%
Government	15	1%	22	1%
Joint Venture	28	1%	95	4%
Private	224	9%	995	40%
Public	1899	77%	646	26%
Subsidiary	315	13%	723	29%

Table 4 shows that the majority of acquirers are public firms, whereas targets are relatively evenly distributed between public firms, private firms and subsidiaries. As it is hard to get corporate information for the non-public firms, we will focus on public acquirers only in the following study.

3.2. North American Deals

From above section, we know that, in the past ten years, M&As in the O&G industry tend to occur in countries with abundant oil and gas resources, especially in Canada and the United States. The O&G firms are more likely to conduct asset acquisitions than acquisitions of majority interests and are more likely to make

acquisitions in related industries. Those acquirers engaged in transactions including the change of corporate control are primarily public firms and willing to invest in private, public and subsidiary target. As a result, we will focus on the United States and Canadian public acquirers who make either acquisitions of majority interest or mergers in the oil and gas industry.

The imposition of those constraints of firm and deal characteristics, results in 1,220 transactions. Eight hundred and thirty-eight transactions are from Canada and 382 transactions are from the United States. Control variables, such as contraction, percentage change of crude oil futures price, percentage change of natural gas futures price, lagged GDP and lagged energy production, are also included in the study. The U.S. business cycle data is obtained from the NBER website (<http://www.nber.org/cycles/cyclesmain.html>). Bloomberg provides the WTI Generic 1st crude oil futures price (CL1) and Generic 1st natural gas futures price (NG1). GDP and the energy production of U.S. and Canada are obtained from the World Bank website (<http://data.worldbank.org/>).

In order to collect the fundamental information of the acquirers from Compustat database, we employ the Center for Research in Security Prices (CRSP) database and CFMRC database to extract the United States firm's 8-digit CUSIP and Canadian firm's 9-digit CUSIP respectively. Then, we merge this information back to our SDC sample, which reduces our number of transactions to 243 for U.S. and 271 for Canada. In addition, an acquirer firm sometimes will announce more than one acquisition on the same day. The double counting event would change the weighted effect of explanatory variables. In those cases, we only keep the deal with largest transaction value as the larger deal is assumed to have more impact on the market. Thus, 10 deals are dropped. The 8-digit CUSIPs of the remainder, 504 deals, are imported into Compustat.

Next, we merge the SDC sample with the Compustat outcomes, which returns us 375 deals in total. To calculate the market to book ratio, we obtain the current closing price of acquirers from CRSP and CFMRC dated as of one trading day before deal announcement. We also extract the daily closing spot exchange rate expressed as Canadian dollars per U.S. dollar from CFMRC. It is used to convert the Canadian dollar value variables from Compustat into U.S. dollar value variables. There are 330 deals left after eliminating the deals without stock price on or before the announcement date and the deals which market to book ratios are negative. Moreover, if the acquirer and the target are from the same city, we will define the deal as a local deal. Although we can get acquirers' city from both SDC and Compustat database, targets' city is not completely listed in SDC database. So, we look up the missing value of targets' city through Factiva business news and Capital IQ. However, it is impossible to check every target's city because several of them are undisclosed private company. We set those firms' city as Unknown.

Subsequently, Eventus software is utilized to perform an event study of the United States firms, whereas SAS programming is utilized to calculate the cumulative abnormal return (CAR) of Canadian firms. We check whether the announcement date is a CRSP trading day. If not, we adjust the announcement date in the request file to the first CRSP trading day after the deal announcement. EVENTUS returns 173 results out of 180 inputs. The six dropped events do not have sufficient data to estimate the parameters since we require a minimum of 30 days of trading in the estimation window. The Canadian analysis returns 144 results out of 150 inputs.

In summary, our final sample contains 317 deals with complete data from above procedures. One hundred and seventy-three deals are from United States and 144 deals are from Canada. The final sample size is not large, however it is

reasonable as we only selected one industry's mergers and acquisitions throughout the ten-year period. The structure of the final sample is shown in Table 5.1 and Table 5.2.

Table 5.1: Sample Description by Year

This table displays the number and percentage of complete deals, horizontal deals, local deals, deals involving public target, 100% stock payment deals, deals conducted by low-priced firm and by illiquid firm in our final sample, reported by year. Local denotes the deals in which the headquarters of acquirer and the target are located in the same city. Penny stock denotes the deals in which the acquirer's closing price of the day before deal announcement less than \$5. Illiquid stock denotes the deals in which the acquirer's usable returns from estimation window less than 120 in the U.S. subsample or usable returns from estimation window less than 100 in the Canadian subsample.

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Total
N Obs	23	23	26	36	39	38	43	27	27	35	317
Complete	18	21	24	33	36	34	35	25	27	29	282
% of Year Obs	78%	91%	92%	92%	92%	89%	81%	93%	100%	83%	89%
Horizontal	19	17	20	29	26	30	29	18	15	20	223
% of Year Obs	83%	74%	77%	81%	67%	79%	67%	67%	56%	57%	70%
Local	10	7	7	16	13	16	13	16	12	12	122
% of Year Obs	43%	30%	27%	44%	33%	42%	30%	59%	44%	34%	38%
Public Target	14	7	12	12	16	15	17	10	9	12	124
% of Year Obs	61%	30%	46%	33%	41%	39%	40%	37%	33%	34%	39%
100% Stock Pay	2	2	4	5	11	3	7	6	9	6	55
% of Year Obs	9%	9%	15%	14%	28%	8%	16%	22%	33%	17%	17%
Penny Stock	8	0	3	6	7	7	15	15	3	4	68
% of Year Obs	35%	0%	12%	17%	18%	18%	35%	56%	11%	11%	21%
Illiquid Stock	4	0	3	8	3	7	5	5	2	4	41
% of Year Obs	17%	0%	12%	22%	8%	18%	12%	19%	7%	11%	13%

From Table 5.1, we see that the oil and gas industry M&As underwent a remarkable change throughout the ten-year period. The deal volume was increasing during the first seven-year interval, reaching a peak, 43 deals, in 2008. This is consistent with PwC's annual report about O&G deals (PwC., Oil & gas deals: 2008 annual review), indicating that the total deal number increased relative to the number in 2007. The volume kept shrinking after the financial crisis and subsequently recovered in 2011. The tendency of complete deals was the same as total deals, whereas the percentage of complete deal was extremely high in 2009 and 2010, 93% and 100% respectively. This fact indicates a slowing momentum presented as the deal volume decreases but the complete rate

increases during the business contraction. One possible explanation is that acquirers become more prudent in a cold market, so they review the transactions in a more cautious and conscious way to ensure their benefits from M&As. On the targets side, they are more likely to accept acquirer's bid without a hard bargain. Acquirers' willingness to conduct a horizontal merger or to acquire a public target fell off, and there are not many 100% stock payment deals throughout the ten-year period. Moreover, the proportion of local deals, low-priced acquirer deals and illiquid acquirer deals were relatively large in 2009, compared to other years in the sample period.

Table 5.2: Sample Description by Nation

This table displays the number and percentage of complete deals, horizontal deals, local deals, deals involving public target, 100% stock payment deals, deals conducted by low-priced firm and by illiquid firm in our final sample, reported by nation. A z-test is employed to verify the significance of differences in proportions, U.S. minus Canada. The z-statistics are shown in the last column.

	United States	%	Canada	%	Diff. of %	z-test
N Obs	173		144			
Complete	147	85%	135	94%	-9%	-2.483**
Horizontal	113	65%	110	76%	-11%	-2.148**
Local	28	16%	94	65%	-49%	-8.944***
Public Target	54	31%	70	49%	-17%	-3.160***
100% Stock Payment	20	12%	35	24%	-13%	-2.983***
Penny Stock	26	15%	42	29%	-14%	-3.053***
Illiquid stock	14	8%	27	19%	-11%	-2.815***

The symbols *, **, and *** represent statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

We divide our sample into two subsamples according to acquirer's nationality in Table 5.2. The completion rate is significant higher in Canada than in the United States. In addition, the Canadian acquirers intend to invest in horizontal deal, local target and public target than the U.S. acquirers. Especially, the difference of local deal proportion, 49%, is significant at the 1% level. A limitation for Canadian bidders is that the location of the nature resources is mainly in Alberta and Saskatchewan. Particularly, the headquarters of most Canadian oil corporations are located in Calgary, explaining why there are a large

number of local deals in Canada. In addition, Canadian bidders are twice as likely to use 100% stock to acquire, although there are more illiquid and low price stock in the Canadian market.

A summary of variable definitions can be found in Appendix A.2. The acquirer's characteristics are provided in Table 6.1. We also test the differences, U.S. minus Canada, in means and medians for each variable, shown in Table 6.2. Then sample distribution classed by penny stock is presented in Appendix A.3.1 and Appendix A.3.2.

Table 6.1: Sample Distribution

This table presents our final sample distribution of numerical variables, including minimum, lower quartile, median, upper quartile, maximum, mean and standard deviation, categorized by acquirer's nationality. Sizediff represents the size difference between acquirer and target scaled by acquirer's size. MB_ratio represents the market to book ratio of acquirer. Acquirer size represents the log of market value of total assets in the year-end before announcement. Leverage represents the acquirer's total liability divided by its book equity. Idiosyn represents the idiosyncratic risk of acquirer. AdjRsqr is obtained from the event study of acquirer.

Acq. Nation	Variable	N Obs	Min	25%	Median	75%	Max	Mean	Std Dev
Entire Market	Sizediff*	317	-5.77	0.57	0.86	0.96	1.00	0.64	0.64
	MB_ratio	317	0.14	1.51	2.05	2.90	36.03	2.70	2.94
	Acquirer size	317	1.48	5.41	6.57	8.05	12.89	6.75	2.14
	Leverage	317	0.01	0.51	0.92	1.34	42.96	1.24	2.54
	Idiosyn	307	-1.31	0.94	1.70	2.70	10.20	2.01	1.70
	AdjRsqr	317	-0.02	0.04	0.15	0.27	0.79	0.18	0.18
Canada	Sizediff*	144	-3.67	0.54	0.82	0.96	1.00	0.62	0.62
	MB_ratio	144	0.14	1.33	1.74	2.42	36.03	2.28	3.30
	Acquirer size	144	1.48	4.96	6.01	7.50	10.45	6.24	1.99
	Leverage	144	0.01	0.40	0.62	1.02	2.94	0.77	0.58
	Idiosyn	144	-1.31	1.06	1.98	3.08	10.20	2.33	1.90
	AdjRsqr	144	-0.01	0.04	0.11	0.25	0.79	0.16	0.17
United States	Sizediff*	173	-5.77	0.59	0.87	0.96	1.00	0.66	0.65
	MB_ratio	173	0.35	1.71	2.36	3.47	20.02	3.04	2.57
	Acquirer size	173	2.04	6.06	6.93	8.26	12.89	7.17	2.17
	Leverage	173	0.01	0.85	1.16	1.65	42.96	1.62	3.35
	Idiosyn	163	-1.27	0.80	1.54	2.38	6.18	1.73	1.46
	AdjRsqr	173	-0.02	0.06	0.16	0.30	0.78	0.20	0.18

* Larger number of Sizediff represents smaller deal. The negative minimum number is due to reverse takeover, while the maximum number approaches 1 when the acquirer is much larger than the target.

Table 6.2: Difference in means and medians

This table presents the differences, U.S. minus Canada, in means and medians, categorized by variables from Table 6.1. We use a t-test to examine the significance of differences in means and a Wilcoxon two-sample test to examine the significance of differences in medians. The p-values of the t-test and the Wilcoxon two-sample test are shown in the brackets.

Variable	Diff. of means	P-value	Diff. of medians	P-value
Sizediff	0.04	(0.5573)	0.05	(0.2354)
MB_ratio	0.76**	(0.0255)	0.62***	(<.0001)
Acquirer size	0.93***	(0.0001)	0.92***	(<.0001)
Leverage	0.85***	(0.0013)	0.54***	(<.0001)
Idiosyn	-0.60***	(0.0025)	-0.44***	(0.0031)
AdjRsqr	0.04**	(0.0370)	0.05**	(0.0241)

The symbols *, **, and *** represent statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

We conclude that U.S. firms have significant large numbers in most of the numerical variables from Table 6.2. Compared with Canadian acquirers in both means and medians, there are more glamour acquirers in the United States represented by higher market to book ratio. They also have larger firm size and higher leverage rate, which are significantly different from Canadian acquirers. Yet, the size differences between acquirer and target are almost the same in two countries. We see that the Canadian acquirers exposure to higher level of idiosyncratic risk. Finally, a larger adjusted r-squared means that the noise from the event study model is less in the U.S. subsample.

4. Methodology

4.1. Event Study Methodology

The event study method was introduced by Fama, Fisher, Jensen and Roll (1969) to examine how new information influences stock prices. CRSP Value-weighted returns and CFMRC Daily Value-weighted returns are employed as the market index return to estimate the normal returns. Our estimation window is 120 trading days and ends 46 days before the event date. There is a possibility of information leakage before deal announcement, so it is reasonable to end our

estimation period at Day -46 to eliminate the effect of unusual stock price change before the event announcement. In addition, some firms do not have trading activity on the exact announcement date, but we can contain their information by selecting a broader event window. Our 5-day event window is from 2 days before to 2 days after the event date. We require that the acquirer has sufficient trading data, at least 30 trading days, to estimate the coefficients.

We have to admit, however, that there are some limitations associated with event study method. Firstly, according to MacKinlay (1997), the power of event study is limited in long interval since we cannot assume that the long-term expected return is zero. To avoid this problem, we will only use the methodology for short term estimation. Secondly, we should not neglect that only selecting one industry may affect the independence of events. However, our events are scattered during the 10-year time period, which would help the independence of events. Moreover, standard event study is still used in single industry research without any adjustments about estimation method. Two recent papers, Akdoğu (2009) and Becher et al. (2012), employed the standard event study method to studying the telecommunications and utilities industries respectively. Akdoğu (2009) used the S&P 500 index as the benchmark of market model with an estimation window containing 255 trading days. Becher et al. (2012) used the CRSP value-weighted index as the benchmark of market model with an estimation window of 90 trading days. Although there are some problems associated with event studies, it is still the most broadly and popular used methodology in examining the effect of mergers and acquisitions on stock returns.

The market model is employed herein to measure the market response to new events. The historical data in estimation period (-166, -46) is used to estimate the parameters in equation (1) for each firm i .

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

Where

R_{it} = the daily return of firm i at time t;

α_i = the intercept of firm i;

β_i = the parameter of firm i which indicates the sensitivity of the stock's return to the market's return;

R_{mt} = the market return at time t which is the daily return on the CFMRC Daily Value Weighted Index or CRSP Value Weighted Index;

ε_{it} = an error term of firm i at time t;

The announcement day of mergers and acquisitions has been deemed as the event day, day 0. Then α_i and β_i , obtained from estimation window, are used to forecast the expected stock return, $\hat{\alpha}_i + \hat{\beta}_i R_{mt}$, on day t. The difference between the expected stock return and the actual return which is the abnormal return, AR_{it} , and is attributed to the event:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \quad (2)$$

There are two ways to present the result of the event study. Firstly, we average the abnormal returns of all firms to obtain the mean abnormal return for each day, shown in equation (3), and then sum the average abnormal returns from Day -40 to Day 10, shown in equation (4), in order to obtain the cumulative abnormal return over the event window (-40, 10).

$$\overline{AR}_t = \frac{\sum_{i=1}^n AR_{it}}{n} \quad (3)$$

Where n = the number of firms in each portfolio;

$$ACAR_T = \sum_{t=1}^T \overline{AR}_t \quad (4)$$

We then conduct a cross sectional analysis in order to evaluate the impact of the announcement after controlling for firm, deal and economic factors. We sum the abnormal returns of individual firms to obtain the cumulative abnormal return

over various event windows shown in equation (5). In the following study, we will mainly consider acquirer CAR from event windows (-2, +2).

$$ACAR_i = \sum_{t=-1}^T AR_{it} \quad (5)$$

We compute the Canadian firms' CAR manually by SAS and export the U.S. firms' CAR easily from EVENTUS.

4.2. Logistic Test

We employ two logistic tests. The first one is used to capture the impact of size, geographic proximity, diversification effect, acquirer's past performance and low-priced stock on the probability of deal completion. The dummy variable, *Status*, equals 1 when the deal is completed and otherwise equals zero. *Sizediff* is used to measure the size difference between acquirer and target, which is calculated by the market value of acquirer minus the transaction value of the deal then scaled by the market value of acquirer. Since it is impossible to get all of targets' market value because several of them are privately held firms, the deal value is taken as proxy for target firm's market value according to Uysal et al. (2008). This method is reasonable as the acquirer will bid according to the market value of target in a healthy market. The market to book ratio, *MB ratio*, is employed to measure market reaction to bidder's past performance, calculated following equation: $MB \text{ ratio} = \frac{\text{the closing price one-day before announcement}}{\text{book value per share}}$. The most widely adopted approach to calculate the market-to-book ratio is from the Fama and French (1993). However, they calculated the market value of equity based on the end of December of year t-1 since their dependent variable is the monthly return. In our case, we take the stock price on the day prior to the deal announcement in order to capture the latest market evaluation towards the acquirer. In addition, we include two dummy variables: *SIC* equaling 1 if the target and acquirer are in the same industry (same 4-digit

SIC code from SDC), and *Geo* equaling 1 when target and acquirer headquarters are in the same city. We also include a binary variable, *Penny Stock*, using the definition of penny stock from U.S. Securities and Exchange Commission (SEC) that a penny stock is a security trading below \$5 per share. This dummy variable equals 1 if acquirer's closing price of the day before deal announcement less than \$5. The regression model is shown in equation (6).

$$Status = \beta_0 + \beta_1 Sizediff + \beta_2 Geo + \beta_3 SIC + \beta_4 MB\ ratio + \beta_5 Penny\ Stock \quad (6)$$

From Hypothesis 5, we expect a negative relationship between *Sizediff* and *Status*, which means that the probability of deal completion will increase by acquiring a larger target. Also, it is more likely to observe that the acquirer and the target are from the same city in a complete deal. We anticipate a negative relationship between *MB ratio* and *Status*. Namely, value firms with less likelihood of mispricing are more likely to complete a deal. The low-priced stock firms are expected to have a lower likelihood of completing a deal.

The second logistic regression is used to identify the characteristics of the penny stock. If the low-priced stock will generate a liquidity problem, then we need to separate them from the entire sample. We also consider that the acquirer's past performance and financial slack will have an impact on the probability of being a penny stock.

Acquirer's fundamental, *Leverage*, is included. The book leverage, equaling total liabilities divided by stockholders' book equity, is used to examine whether firms with higher level of the financial slack, represented by lower leverage, have larger probability of completing a deal. Furthermore, we could take book leverage as a proxy of corporate governance. Lower book leverage represents poorer governance on the management, leading to more deal completions caused by the

manager's overexpansion without maximizing shareholder's value. The alternative, market leverage, is an inappropriate measurement since the option compensation of manager will grow while the market leverage is decrease based on Mehran (1992).

We define the dummy variable, *Illiquidity*, equals 1 if usable returns from estimation window are less than 120 for U.S. firms or usable returns from estimation window are less than 100 for Canadian firms. A looser standard for an illiquid stock in the Canadian subsample is because there are many more non-trading observations in the CFMRC database than observed in the U.S. data. The idiosyncratic risk, *Idiosyn*, is used to capture the firm-specific risk of acquirer, calculated by the following equation: $Idiosyn = \ln\left(\frac{1-R^2}{R^2}\right)$. (Hutton et al. (2009)) And the R^2 is obtained from the event study. The second logistic regression model is presented in equation (7).

$$Penny\ Stock = \beta_0 + \beta_1 MB\ ratio + \beta_2 Illiquidity + \beta_3 Idiosyn + \beta_4 Leverage \quad (7)$$

After controlling the MB ratio and Leverage, we expected that the illiquid stocks and stocks with more idiosyncratic risk are more likely to be penny stocks (Hypothesis 6).

4.3. Cross-sectional analysis

In this section, we model the acquirers' cumulative abnormal return, *ACAR*, as a function of the previously applied explanatory variables to test Hypothesis 1, 2, 3, 4, and 7. Then, we add several new independent variables to test Hypotheses 8 and 9.

In hypothesis 8, we expect that the method of payment will influence acquirer's CAR differently in the U.S. and Canadian subsamples. Dummy variable, *Stock*,

equals 1 when the payment is 100% stock exchange. The other deal characteristic, *Target public*, equals 1 when the target firm is a public firm and is used to test Hypothesis 9. Koeplin et al. (2000) found a significant private target discount. An interaction term, *Stock*Target public*, is also included in order to verify Officer (2009)'s finding. He reported that the acquirers will receive higher returns if they pay stock when the target volatility is high. It can also bring us insight into whether a bidder who acquires a private target in same city has a higher possibility to gain more.

Percentage change of CLI is the indicator of crude oil futures price. We expect that the future price would provide us forecast information regarding the hydrocarbon industry. In addition, Chinn et al. (2005) mentioned that the futures price of crude oil is an unbiased predictor of the spot price. We anticipate that the futures prices, as control variables, are positively correlated with the acquirer's CAR. Although CL1 commodity is from the U.S. market, Canadian's petroleum is traded based on the West Texas Intermediate (WTI) oil price. So, it is appropriate to apply it to Canadian oil and gas firms as well.

In addition, several economic factors are considered in our regression model. We extract the expansion and contraction period of U.S. economy from National Bureau of Economic Research (NBER). Our sample contains one business contraction period from December 2007 to June 2009. The dummy variable, *Contraction*, equals one when the transaction occurred in the contraction period. We expect the acquirer's performance in stagnant economy period is better than the remainder since the acquirer tend to review the deal more cautious and the target are less likely to bargain hard. As for variables like GDP and energy production, ratios are preferred rather than dollar values because the ratios will present the change of economy. We calculate *Lagged GDP* as GDP_{t-1} divided by GDP_{t-2} at year t. It is the same for energy production. These variables are used to

observe the effect of the past macro economy on the acquirer's abnormal return. The production volume is expected to negatively correlate with the returns of oil and gas firms based on Boyer and Filion (2006). However, the adjusted r-squared converted to a negative value if we include all of macro-economic factors. We only select the Lagged GDP as a representative of the macroeconomy in the equation (8). A binary variable, *Canada*, equals 1 if acquirer is from Canada since we combine the low-priced firm together in the penny stock subsample.

$$\begin{aligned}
 ACAR = & \beta_1 Sizediff + \beta_2 MB \text{ ratio} + \beta_3 Geo + \beta_4 Target \text{ Public} + \\
 & \beta_5 Stock + \beta_6 Stock * Target \text{ Public} + \beta_7 Idiosyn + \beta_8 Illiquidity + \\
 & \beta_9 Leverage + \beta_{10} Percentage \text{ change of } CL1 + \beta_{11} Lagged \text{ GDP} + \\
 & \beta_{12} Canada + \varepsilon
 \end{aligned}
 \tag{8}$$

4.4. Case Study Methodology

Three out-of-sample case studies are introduced to examine our results from large sample analysis and to reveal details lost in large sample. We mainly refer to two papers in order to develop our case study approach. Aktas et al. (2013) analyzed the interrelationships between bidder, rival and their customers using a case study. They presented historical data on their research objects and conducted event studies using a market model and the value-weighted CRSP index. An event study was also used in Lys and Vincent (1995) to calculate abnormal returns. In addition, they used the cumulative abnormal return to compute the acquirer's total wealth loss shown in equation (9). Moreover, fundamentals from the annual report in subsequent years are used to verify the market assessment.

$$\begin{aligned}
 & Total \text{ wealth loss} = \\
 & CAR * Preannouncement \text{ stock price} * Shares \text{ outstanding at year end}
 \end{aligned}
 \tag{9}$$

As we can see from Table 6.1, the oil and gas industry in the United States is larger than the Canadian industry. In order to make a comparison between our

cases, we will choose a Canadian firm with a large deal so that we can find a comparable U.S. firm. First, we rank the deal value and select the Crescent Point Energy as our Canadian case as it has a fairly large transaction value among all Canadian deals. Then, we pick another two US cases in which the acquirers have a similar revenue level relative to Crescent Point. LinnCo, LLC and its parent firm, Linn Energy, LLC, executed a larger transaction than Crescent Point. However, it took them almost a year to complete the deal. As for the other American case, the transaction announced by Continental Resources, Inc. has a similar deal value to the Canadian deal.

In our case study, stock price of acquirer is plotted in order to give us a direct impression about market reaction towards acquirer's takeover attempt in the first place. Next, we present the historical financial information regarding acquirer firms such as total revenue, net incomes, returns on assets, diluted EPS and full time employees. Fundamentals in the following year will be presented if applicable. Afterwards, we collect merger-related events through three channels: (1) Edgar and Sedar for filings and press releases; (2) Factiva for news; (3) S&P Capital IQ for fundamentals and connections between firms. An event study is conducted to evaluate the acquirer's performance toward takeover events. We chose a short event window, (-2, 2) to make sure no other nonmerger-related events are included.

5. Results of Large Sample Analysis

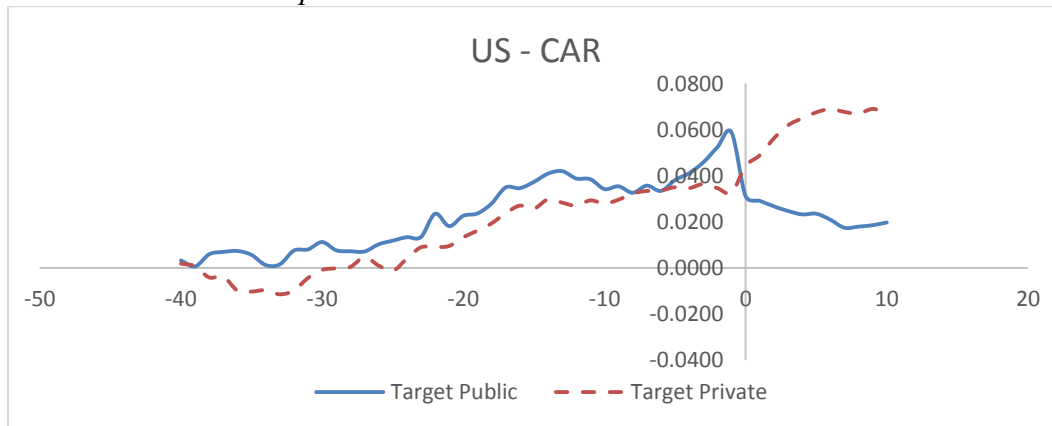
5.1. Basic Event Study

To obtain the market reaction toward the deal announcement over event window, we calculate the mean cumulative abnormal return from Day -40 to Day 10, classed by acquirer nationality.

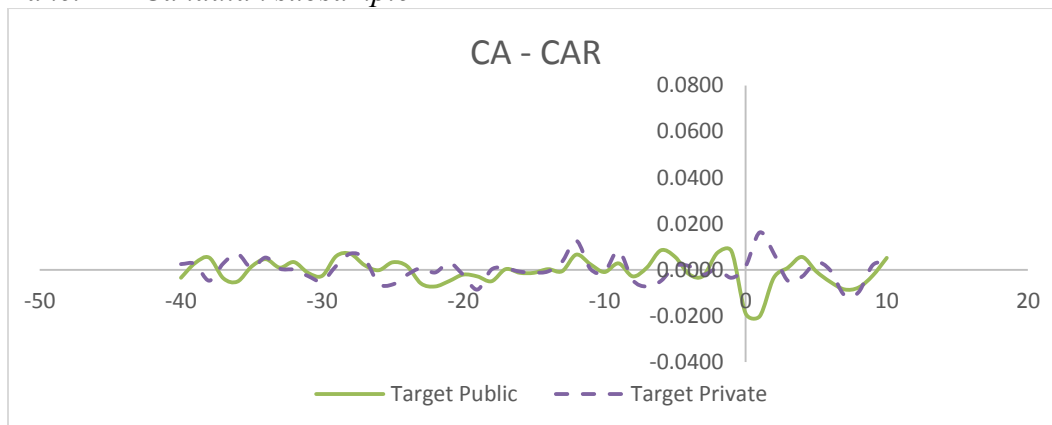
**Figure 4: Cumulative abnormal returns associated with firm announcement
(Replicate Appendix A.4)**

The figure below plots mean cumulative abnormal returns for Canadian and U.S. bidders separately over 51-day event window from (-40, 10).

Panel A – U.S. subsample



Panel B – Canadian subsample



Referring to the Fig.10 from Betton et al. (2008) in Appendix A.4, the U.S. bidders will receive a positive abnormal return if they acquire private target or a negative abnormal return if they acquire public target. As shown in Figure 4, we observe different patterns of cumulative abnormal returns in the U.S. and Canadian subsamples. In general, we observe better performance from the U.S. bidder throughout the event window. For bidders' performance before the deal announcement, the mean CAR of the U.S. bidders begin increasing sharply in the

40 days, whereas the mean CAR of the Canadian bidders seems to be volatile around 0. In particular, Panel A shows a pronounced run-up from the U.S. bidder who acquires public target in several days before the deal announcement. In the following days after the deal announcement, however, those bidders who acquire public targets receive negative market responses in both the U.S. and Canadian subsamples. In contrast, the stock performance of the bidders who acquire private targets maintains an increasing trend after the deal announcement, especially in the U.S. subsample.

We compare our results in the U.S. subsample with Betton et al. (2008) in Table 7. A pronounced run-up period is observed in our U.S. subsample since the mean CAR in our analysis is significantly larger than their result. We assume that a significant run-up is a special characteristic in the oil and gas industry. Yet, we do not observe a significant mean CAR at the announcement period (-1, 1).

Table 7: Results comparisons (the U.S. subsample)

This table compares the results from Betton et al. (2008) with the results from our U.S. subsample. The number of Mean CAR and Z-statistics in Betton et al. (2008) is taken from Table 8 Panel D. They include all the U.S. 6,836 transactions from 1980 to 2005 in their analysis. Our results include 173 transactions in our U.S. subsample.

	Betton et al. (2008)		Our results	
	(-41, -2)	(-1, 1)	(-41, -2)	(-1, 1)
Mean CAR	0.50%	0.69%	4.52%	0.26%
Z-statistics	-2.248	-3.886	3.481	-0.319

5.2. Marginal Effects of Deal Completion and Penny Stock

In this part, we shed some light on what drives a completed deal in the oil and gas industry. Those characteristics that are expected to contribute to a positive cumulative abnormal return are taken into consideration. In Hypothesis 5, we assume that a small size difference between acquirer and target, geographical proximity, value firms and non-penny stock firms are more likely to result in successful deals. The first logistic regression result is illustrated in Table 8.1 and the first logistic model fitness result is displayed in Table 8.2.

Table 8.1: Logistic Regression of Deal Completion

This table relates deal characteristics, such as size difference, geographical proximity, horizontal deal, acquirer’s market to book ratio and penny stocks, to the likelihood of deal completion. There are 317 deals in our final sample, 282 completed deals versus 35 uncompleted deals. In the U.S. subsample, there are 147 completed deals versus 26 uncompleted deals. In the Canadian subsample, there are 135 completed deals versus 9 uncompleted deals.). Sizediff represents the size difference between acquirer and target scaled by acquirer’s size. Geo dummy variable equals 1 when the acquirer and the target are in the same city and otherwise equals 0. SIC dummy variable equals 1 when target and acquirer are in the same industry and otherwise equals 0. MB_ratio represents the market to book ratio of acquirer. Penny stock dummy variable equals 1 when acquirer’s closing price of the day before deal announcement less than \$5 and otherwise equals 0. The p-values of Chi-square test are shown in the brackets.

Variables	Entire Sample		U.S. Subsample		Canadian Subsample	
	Coefficient	Pr > ChiSq	Coefficient	Pr > ChiSq	Coefficient	Pr > ChiSq
Intercept	2.340	(0.000)	1.954	(0.000)	9.365	(0.003)
Sizediff	-0.287	(0.440)	-0.079	(0.795)	-5.082*	(0.067)
Geo	0.710*	(0.099)	1.783*	(0.093)	-2.018*	(0.084)
SIC	-0.123	(0.763)	-0.065	(0.888)	-0.696	(0.540)
MB_ratio	-0.005	(0.923)	-0.016	(0.844)	-0.047	(0.722)
Penny_stock	-0.760*	(0.063)	-1.207*	(0.020)	-1.293	(0.159)
R-Square	0.020		0.054		0.073	
Max-rescaled R-Square	0.040		0.095		0.195	

The symbols *, **, and *** represent statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

Table 8.2: Logistic Model Fitness of Deal Completion

This table displays the percent correct prediction of deal completion. Response 1 represents completed deal and Response 0 represents uncompleted deal. The column shows the predicted response of deals and the percentage of correct prediction. The percentage of correct prediction of the model overall is shown in the last row.

Observed Response	Entire Predicted		U.S. Predicted		Canadian Predicted	
	1	% Correct	1	% Correct	1	% Correct
0	35	0.00%	26	0.00%	9	0.00%
1	282	88.96%	147	84.97%	135	93.75%
Overall	88.96%		84.97%		93.75%	

Geo dummy is positively related and Penny stock dummy is negatively related to the completion of O&G transactions in the whole sample, as shown in Table 8.1. In other words, the likelihood of completing a deal will be higher if the acquirer is not a low-priced firm or if the acquirer and the target are from the same city, partially supporting our Hypothesis 5. Since most of the uncompleted transactions are from the U.S., we observe a similar outcome from the U.S. subsample. In the Canadian subsample, however, the uncompleted deal is more likely to be the local deal or have the large size difference. We test the overall performance of the model in Table 8.2. The prediction performance of the model is not very good. Especially in the U.S. subsample, the overall percentage of

correct predictions is only 84.97%. Although the independent variables in a logistic regression do not have to be normally distributed, we notice that the number of completed deals outweighs the number of uncompleted deals, which could lead to an opposite result in the U.S. and Canada about how the geographic proximity affect the probability of deal completion.

Since the low-priced firm presents a pronounced influence on deal completion, it is essential to examine the characteristics of those penny stocks. Particularly, the penny stocks should be separate from the whole sample if they tend to less liquid. The small public companies with low-priced stocks will skew the market reaction towards the deal announcement due to their higher volatilities. Ball et al. (1995) documented that low-priced stock are highly sensitive towards the liquidity effect. Since those stocks are seldom traded, a slightly shift of the price will lead to a dramatic change of mean of the returns, in their case $\$1/8^{\text{th}}$ increase of stock price would reduce the mean by 25%. In Hypothesis 6, we anticipate that acquirers with low liquidity and high idiosyncratic risk are more likely to be penny stock acquirers. The second logistic regression result is illustrated in Table 9.1 and the logistic model fitness result is displayed in Table 9.2.

Table 9.1: Logistic Regression of Penny Stock

This table relates certain acquirer's characteristics, such as market to book ratio, illiquidity, idiosyncratic risk and leverage, to the likelihood that the acquirer is a penny stock. There are 317 deals in our final sample, 64 penny stocks versus 243 non-penny stocks. In the U.S. subsample, there are 22 penny stocks versus 141 non-penny stocks. In the Canadian subsample, there are 42 penny stocks versus 102 non-penny stocks. MB_ratio represents the market to book ratio of acquirer. Illiquidity dummy variable equals 1 when usable returns from estimation window less than 120 in the U.S. subsample or usable returns from estimation window less than 100 in the Canadian subsample and otherwise equals 0. Idiosyn represents the acquirer's idiosyncratic risk. Leverage represents the acquirer's total liability divided by its book equity. The p-values of Chi-square test are shown in the brackets.

Variables	Entire Sample		U.S. Subsample		Canadian Subsample	
	Coefficient	Pr > ChiSq	Coefficient	Pr > ChiSq	Coefficient	Pr > ChiSq
Intercept	-2.864	(0.000)	-3.221	(0.000)	-1.556	(0.010)
MB ratio	-0.047	(0.377)	-0.122	(0.366)	-0.054	(0.327)
Illiquidity	1.766***	(0.000)	1.635*	(0.060)	1.587***	(0.005)
Idiosyn	0.498***	(0.000)	0.340*	(0.057)	0.564***	(0.000)
Leverage	0.129	(0.100)	0.479**	(0.020)	-1.569**	(0.016)
R-Square	0.201		0.132		0.309	
Max-rescaled R-Square	0.314		0.242		0.441	

The symbols *, **, and *** represent statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

Table 9.2: Logistic Model Fitness of Penny Stock

This table displays the percent correct prediction of being a penny stock. Response 1 represents penny stock and Response 0 represents non-penny stock. The column shows the predicted response of deals and the percentage of correct prediction. The percentage of correct prediction of the model overall is shown in the last row.

Observed Response	Entire Predicted			U.S. Predicted			Canada Predicted		
	0	1	% Correct	0	1	% Correct	0	1	% Correct
0	232	11	75.57%	140	1	85.89%	91	11	63.19%
1	42	22	7.17%	16	6	3.68%	21	21	14.58%
Overall	82.74%			89.57%			77.77%		

As expected, penny stocks have significant illiquidity issue and higher level of idiosyncratic risk, which supported our Hypothesis 6. To eliminate the promoter effect of penny stocks in both U.S. and Canada, we create a new subsample with all penny stocks from both countries. Additionally, the financial slack level of low-priced firm is different in the U.S. and Canadian subsample. We found that the U.S. low-priced firm has higher leverage relative to the low-priced Canadian firm.

5.3. Correlation Analysis

Before estimating an ordinary least square (OLS) regression, we detect the multicollinearity between the explanatory variables by constructing three correlation metrics in order to model a better regression.

Table 10: Correlation Matrix

This table reports the correlation matrix categorized by different sample. Size represents the size difference between acquirer and target scaled by acquirer's size. MB represents the market to book ratio of acquirer. SIC dummy variable equals 1 when the acquirer and the target are in the same industry and otherwise equals 0. Geo dummy variable equals 1 when the acquirer and the target are in the same city and otherwise equals 0. The p-values of the coefficients are presented in the brackets.

	US				CA				Penny			
	Sizediff	MB_ratio	SIC	Geo	Sizediff	MB_ratio	SIC	Geo	Sizediff	MB_ratio	SIC	Geo
Sizediff	1				1				1			
MB_ratio	0.071 (0.396)	1			-0.203** (0.041)	1			-0.120 (0.331)	1		
SIC	-0.069 (0.404)	0.143* (0.083)	1		-0.175* (0.079)	0.018 (0.858)	1		-0.199 (0.103)	0.012 (0.922)	1	
Geo	-0.118 (0.153)	0.116 (0.164)	0.156* (0.059)	1	-0.295*** (0.003)	-0.126 (0.206)	0.301*** (0.002)	1	-0.092 (0.454)	-0.166 (0.175)	0.432*** (0.000)	1

The symbols *, **, and *** represent statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

Table 10 indicates that the SIC dummy variable is positively correlated with MB ratio and geographical proximity dummy variable. It is reasonable to observe this correlation since there is an industry cluster in the oil and gas industry. Therefore, we will not take the SIC dummy variable as our control variables in the following regression. In addition, the geographical proximity dummy variable shows a correlation with size difference in the U.S. subsample. But a causative connection between these two variables is indirect and not obvious. In turn, it is reasonable to keep geographical dummy variable as our key explanatory variables in the multivariate regression.

5.4. Multivariate Analysis

After validating that no significant correlation exists between our remaining key explanatory variables, a multivariate regression is used to specify which characteristics can explain the cumulative abnormal return of M&As in the oil and gas industry. A basic multivariate regression involving three variables is estimated at first. Then four other regressions containing additional variables are estimated accordingly. The results are summarized in Table 11.1, Regression (1) – (4), and in Table 11.2, Regression (5). We believe that there is a discrepancy between penny stocks and non-penny stocks. Therefore, we divide our sample into two subsamples according to their stock price and then separate the non-penny stock transactions based on acquirer's nationality. We examine their characteristics using the same regressions. As expected, the estimates are dramatically different in U.S., Canadian and penny stock subsamples.

Table 11.1: Multivariate Regression Model (1) – (4)

This table exhibits the coefficients and their p-values, shown in the brackets, for each variable in the different subsamples. US, CA, and PS represent U.S. subsample, Canadian subsample and penny stock subsample respectively. The dependent variable is the five-day CAR in event window (-2, 2). Sizediff represents the size difference between acquirer and target scaled by acquirer's size. MB_ratio represents the market to book ratio of acquirer. Geo dummy variable equals 1 when the acquirer and the target are in the same city and otherwise equals 0. Target public dummy variable equals 1 when the target is a public firm and otherwise equals 0. Stock dummy variable equals 1 when the payment of the deal is 100% stock and otherwise equals 0. The interaction term Stock*Target public equals 1 when a bidder who acquires a public target through 100% stock payment. Canada dummy variable is only used in subsample PS in order to control the country difference of penny stock.

Variable	US				CA				PS			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Intercept	0.001 (0.848)	-0.006 (0.377)	0.000 (0.982)	0.000 (0.930)	-0.010 (0.556)	-0.002 (0.894)	-0.003 (0.852)	-0.003 (0.879)	0.016 (0.572)	0.018 (0.530)	-0.004 (0.879)	-0.009 (0.760)
Sizediff	-0.004 (0.492)	0.001 (0.867)	-0.003 (0.542)	-0.003 (0.627)	0.026** (0.037)	0.022* (0.080)	0.020 (0.126)	0.019 (0.153)	-0.020 (0.151)	-0.020 (0.144)	-0.012 (0.371)	-0.011 (0.428)
MB_ratio	0.001 (0.308)	0.001 (0.274)	0.001 (0.341)	0.001 (0.349)	-0.005* (0.056)	-0.006** (0.041)	-0.005* (0.053)	-0.005* (0.055)	-0.001 (0.788)	-0.001 (0.788)	-0.001 (0.771)	-0.001 (0.843)
Geo	-0.002 (0.806)	-0.004 (0.568)	-0.003 (0.659)	-0.003 (0.576)	0.002 (0.851)	0.010 (0.366)	0.005 (0.599)	0.006 (0.590)	-0.078** (0.025)	-0.073* (0.053)	-0.080** (0.020)	-0.066* (0.066)
Target Public		0.010* (0.059)				-0.018* (0.089)				-0.012 (0.716)		
Stock			0.014* (0.078)	-0.034 (0.208)			-0.018 (0.125)	-0.011 (0.672)			0.066* (0.053)	0.110** (0.031)
Stock*Target Public				0.052* (0.064)				-0.008 (0.781)				-0.071 (0.241)
Canada									0.039 (0.269)	0.039 (0.272)	0.040 (0.239)	0.035 (0.310)
Adj R-Sq	-0.011	0.007	0.004	0.021	0.074	0.092	0.087	0.078	0.040	0.027	0.082	0.088
Number of Obs	147	147	147	147	102	102	102	102	68	68	68	68

The symbols *, **, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

Table 11.2: Multivariate Regression Model (5)

This table exhibits the coefficients and their p-values, shown in the brackets, for each variable in regression (5). US, CA, and PS represent U.S. subsample, Canadian subsample and penny stock subsample respectively. There are 307 out of 317 deals with sufficient data for regression (5), 141 U.S. deals, 102 Canadian deals and 64 penny stock deals respectively. The dependent variable is the five-day CAR in event window (-2, 2). Sizediff represents the size difference between acquirer and target scaled by acquirer's size. MB_ratio represents the market to book ratio of acquirer. Geo dummy variable equals 1 when the acquirer and the target are in the same city and otherwise equals 0. Target public dummy variable equals 1 when the target is a public firm and otherwise equals 0. Stock dummy variable equals 1 when the payment of the deal is 100% stock and otherwise equals 0. Idiosyn represents the acquirer's idiosyncratic risk. Leverage represents the acquirer's total liability divided by its book equity. % change c11 represent the daily percentage change of crude oil futures price. Lagged GDP represent the GDP change in year before deal announcement. Canada dummy variable is only used in subsample PS in order to control the country difference of penny stock.

Variable	US (5)	CA (5)	PS (5)
Intercept	-0.126 (0.237)	-0.041 (0.511)	0.253 (0.375)
Sizediff	0.002 (0.751)	0.026* (0.053)	-0.005 (0.751)
MB_ratio	0.000 (0.841)	-0.006** (0.041)	0.000 (0.956)
Geo	0.000 (0.962)	0.010 (0.404)	-0.073* (0.053)
Target Public	0.009 (0.122)	-0.014 (0.213)	-0.035 (0.344)
Stock	0.010 (0.281)	-0.015 (0.233)	0.101** (0.012)
Idiosyn	-0.001 (0.765)	0.006* (0.056)	-0.003 (0.703)
Leverage	0.002 (0.550)	-0.007 (0.409)	-0.001 (0.696)
% change c11	0.035 (0.323)	-0.014 (0.866)	0.447** (0.033)
Lagged GDP	0.114 (0.266)	0.030 (0.578)	-0.239 (0.395)
Canada			0.047 (0.243)
Adj R-Sq	0.002	0.106	0.131
Number of Obs	141	102	64

The symbols *, **, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

Overall, each subsample has its unique characteristics. The Panel US and Panel CA in Tables 10.1 and 10.2 present the estimates of the cross-sectional regression for the U.S. and Canadian subsamples respectively. We find that the coefficient on the size difference is significant and positive, approximately 0.025, in the

Canadian subsample, meaning that a large size difference⁷ would give rise to a positive market reaction towards the deal announcement. Shareholders are more interested in smaller targets. Thereby, Hypothesis 1 has been rejected. The reason is that large firms with more advanced technology tend to have lower unit cost and can apply this knowledge to targets (Neubecker and Stadler (2003)). In other words, the investors expect a cost saving and efficiency improvement of the small target if acquired by a relatively large firm.

The impact of the MB ratio is very different in the U.S. and Canadian markets. The U.S. market is less sensitive towards higher MB ratio when compared to the Canadian market, even though the mean and median of MB ratio is significant higher in the United States. It is notable that market to book ratio is negatively related to the CAR throughout Table 11.1 and Table 11.2 Panel CA at 0.1 significance level. It indicates that value firms will receive a positive market response after the deal is announced because the CAR decreases by approximately -0.005 for each unit increase in the MB ratio. Consequently, Hypothesis 4 has been rejected in U.S. subsample but supported in Canadian subsample.

Moreover, we observe that the U.S. market response is positively related to the public status of the target firm in Regression (2). However, an opposite result is shown in the Canadian market. A public target firm is more likely to bring a negative CAR to Canadian bidders, which is consistent with Officer (2007). Regarding the method of payment, a positive impact of 100% stock payment on CAR is significant in the U.S. subsample. Hypothesis 8 is rejected. The potential explanation is that the transaction value in the U.S. hydrocarbon industry is large so that the cash payment will generate a pronounced tax obligation. A stock

⁷ A large Sizediff means that the target is small.

exchange could help the target shareholders to defer the tax, which allows the acquirer to bid lower without considering the tax issue. In addition, the market will react positively towards a stock payment when the target is public. The significant result about target public status is not consistent in Regression (5) after adding more control variables.

Furthermore, we have insignificant result in regression (5) to support Hypothesis 3 that lower leverage will lead to a positive acquirer's performance after the announcement. As for the geographic proximity effect, we cannot infer a strong preference for geographically proximate acquisitions in both U.S. market and Canadian market. All of the variables, except for the interaction terms, are included in Table 11.2, suggesting that 5-day abnormal return in respective countries is seldom affected by macro economy characteristics.

The Panel PS in Table 11.1 and Table 11.2 summarize the results of the cross-sectional regression using the penny stock subsample. Ackert and Tian (2008) find that liquidity has a positive effect on pricing efficiency and indicated that more active trading reduces the mispricing. Sadka and Scherbina (2007) also find that illiquid stocks with high analyst disagreement are usually overpriced. The acquirer who has low-priced stocks is under public scrutiny once the deal is announced. This provides investors a chance to review the acquirer's stock price. Then, the market will adjust the mispricing rapidly according to Cooper et al. (1985). We infer that there is no mispricing effect towards the low-priced stocks for the insignificant coefficient of the MB ratio. The local deal decreases acquirer's CAR in the Penny stock subsample, which rejected Hypothesis 2. The possible explanation of the negative reaction in Penny stock subsample is that the geographical proximity of headquarters does not necessarily reflect the proximity of the oil basins. Instead of saving on soft information, the distance between construction sites is more important for the investors. Also, the stock payment is

positively related to low-priced acquirer's performance, consistent with the outcome from the U.S. subsample. Last, we notice that the crude oil price affects low-priced acquirer positively. We summarize our findings corresponding to each hypothesis in Table 12.

Table 12: Summary of findings

The summary of our findings in the entire sample and two subsamples is presented according to nine hypotheses. The tick mark represents the hypothesis is supported by our results, whereas the cross mark represents the hypothesis is rejected by our results. The brackets indicate that the hypothesis is partially supported.

Hypotheses:	EM	US	CA	PS
H1 Target size + CAR		Insign.	✗	Insign.
H2 Geo. Prox. + CAR		Insign.	Insign.	✗
H3 Lev.- CAR		Insign.	Insign.	Insign.
H4 MB ratio - CAR		Insign.	✓	Insign.
H5 Deal completion	(✓)	(✓)	✗	
H6 Penny stock	✓	✓	✓	
H7 Idiosyncratic risk - CAR		Insign.	✗	Insign.
H8 Stock pay - US CAR; Mix pay + CA CAR		(✗)	Insign.	✗
H9 Pvt. target + CAR		(✗)	(✓)	Insign.

6. Additional Test of Different Event Windows

Since we only focused on acquirer's CAR from event window (-2, 2) in previous study, we now conduct an additional test about our results by using acquirer's CAR from different event windows. Event window (3, 30) is expected to provide a general idea of how the market will react after the announcement of mergers and acquisition. Event window (-30, -3) is utilized to capture the information leakage before the deal announcement. The independent variables used in the multivariate regression are the same as those in regression (1) and regression (5). The regression result is presented in Table 13.

Table 13: Cumulative Abnormal Return from Different Event Window

This table exhibits cross-sectional regression results from different event windows (-30, -3) and (3, 30) respectively. The coefficients and their p-values from regression (1) and regression (5) are displayed in Panel A for U.S. subsample, Panel B for Canadian subsample and Panel C for Penny stock subsample. There are 307 out of 317 deals with sufficient data for regression (5), 141 U.S. deals, 102 Canadian deals and 64 penny stock deals respectively. The dependent variable is the acquirer's CAR various from different event windows. Sizediff represents the size difference between acquirer and target scaled by acquirer's size. MB_ratio represents the market to book ratio of acquirer. Geo dummy variable equals 1 when the acquirer and the target are in the same city and otherwise equals 0. Target public dummy variable equals 1 when the target is a public firm and otherwise equals 0. Stock dummy variable equals 1 when the payment of the deal is 100% stock and otherwise equals 0. Idiosyn represents the acquirer's idiosyncratic risk. Leverage represents the acquirer's total liability divided by its book equity. % change c11 represent the daily percentage change of crude oil futures price. Lagged GDP represent the GDP change in year before deal announcement. Canada dummy variable is only used in subsample PS in order to control the country difference of penny stock.

<i>Panel A - US</i>									<i>(3, 30)</i>								
Variable	<i>(-30, -3)</i>		(1)		(2)		(3)		(4)		(5)		(6)		(7)		
	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	
Intercept	0.036	(0.133)	0.036	(0.203)	0.030	(0.211)	-0.122	(0.796)	0.055	(0.024)	0.057	(0.054)	0.053	(0.031)	0.116	(0.805)	
Sizediff	-0.032	(0.203)	-0.032	(0.243)	-0.030	(0.234)	-0.051*	(0.075)	-0.020	(0.428)	-0.021	(0.453)	-0.020	(0.448)	-0.029	(0.309)	
MB_ratio	-0.004	(0.415)	-0.004	(0.416)	-0.004	(0.358)	-0.001	(0.839)	-0.019***	(0.000)	-0.019***	(0.000)	-0.020***	(0.000)	-0.018***	(0.003)	
Geo	-0.028	(0.301)	-0.028	(0.313)	-0.035	(0.200)	-0.042	(0.142)	0.004	(0.872)	0.005	(0.864)	0.002	(0.935)	-0.002	(0.956)	
Target Public			-0.001	(0.968)			-0.035	(0.192)			-0.002	(0.936)			-0.024	(0.378)	
Stock					0.076**	(0.030)	0.096**	(0.015)					0.026	(0.478)	0.028	(0.468)	
Idiosyn							0.003	(0.749)							-0.013	(0.104)	
Leverage							-0.018	(0.180)							0.033**	(0.013)	
% change c11							0.313**	(0.048)							0.186	(0.235)	
Lagged GDP							0.180	(0.692)							-0.075	(0.868)	
Adj R-Sq	0.003		-0.004		0.029		0.046		0.111		0.104		0.108		0.057		
Number of Obs	147		147		147		141		147		147		147		141		
<i>Panel B - CA</i>									<i>(3, 30)</i>								
Variable	<i>(-30, -3)</i>		(1)		(2)		(3)		(4)		(5)		(6)		(7)		
	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	
Intercept	-0.043	(0.259)	-0.049	(0.219)	-0.037	(0.349)	-0.092	(0.534)	-0.076	(0.218)	-0.090	(0.164)	-0.057	(0.373)	-0.102	(0.670)	
Sizediff	0.061**	(0.032)	0.064**	(0.028)	0.055*	(0.064)	0.041	(0.187)	0.128***	(0.006)	0.135***	(0.004)	0.110**	(0.023)	0.103**	(0.045)	
MB_ratio	-0.005	(0.479)	-0.004	(0.507)	-0.005	(0.478)	-0.005	(0.485)	-0.021**	(0.048)	-0.020*	(0.056)	-0.021**	(0.047)	-0.020*	(0.063)	
Geo	0.013	(0.582)	0.007	(0.795)	0.016	(0.502)	0.013	(0.633)	0.021	(0.580)	0.007	(0.875)	0.032	(0.418)	0.016	(0.715)	
Target Public			0.014	(0.580)			0.014	(0.605)			0.032	(0.424)			0.045	(0.306)	
Stock					-0.017	(0.542)	-0.021	(0.487)					-0.054	(0.225)	-0.067	(0.165)	
Idiosyn							-0.014*	(0.083)							-0.011	(0.392)	
Leverage							0.008	(0.661)							0.008	(0.788)	
% change c11							0.081	(0.680)							0.045	(0.886)	
Lagged GDP							0.070	(0.580)							0.047	(0.821)	
Adj R-Sq	0.033		0.026		0.027		0.020		0.113		0.110		0.117		0.092		
Number of Obs	102		102		102		102		102		102		102		102		

<i>Panel C - PS</i>		<i>(-30, -3)</i>								<i>(3, 30)</i>							
Variable	(1)		(2)		(3)		(5)		(1)		(2)		(3)		(5)		
	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	Coeff.	Pr > t	
Intercept	0.061	(0.184)	0.064	(0.177)	0.070	(0.156)	0.214	(0.654)	-0.012	(0.887)	-0.008	(0.924)	0.001	(0.991)	0.153	(0.867)	
Sizediff	0.005	(0.816)	0.004	(0.850)	0.002	(0.935)	0.009	(0.707)	-0.007	(0.872)	-0.008	(0.854)	-0.012	(0.792)	0.007	(0.883)	
MB_ratio	0.001	(0.843)	0.001	(0.845)	0.001	(0.841)	0.000	(0.956)	0.000	(0.990)	0.000	(0.989)	0.000	(0.992)	0.001	(0.934)	
Geo	0.045	(0.424)	0.052	(0.398)	0.046	(0.420)	0.034	(0.586)	0.073	(0.491)	0.081	(0.482)	0.074	(0.488)	0.088	(0.462)	
Target Public			-0.017	(0.768)			0.005	(0.933)			-0.020	(0.852)			-0.027	(0.817)	
Stock					-0.030	(0.601)	0.010	(0.882)					-0.044	(0.683)	0.043	(0.731)	
Idiosyn							-0.025*	(0.088)							-0.033	(0.234)	
Leverage							-0.002	(0.687)							-0.009	(0.353)	
% change c11							0.444	(0.201)							1.338**	(0.046)	
Lagged GDP							-0.086	(0.856)							-0.097	(0.914)	
Canada	-0.089	(0.123)	-0.089	(0.126)	-0.090	(0.122)	-0.059	(0.380)	-0.034	(0.752)	-0.034	(0.755)	-0.035	(0.746)	-0.002	(0.986)	
Adj R-Sq	-0.022		-0.037		-0.034		-0.046		-0.054		-0.071		-0.069		-0.051		
Number of Obs	68		68		68		64		68		68		68		64		

The symbols *, **, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

In Panel A U.S. subsample, 100% stock payment and percentage change of CL1 are positively related to acquirer's performance before the deal announcement. After the deal announcement, we notice that the value acquirer with lower MB ratio performs better, which supports the fourth hypothesis. In Panel B Canadian subsample, the size difference is positively correlated to acquirer's performance both before and after the deal announcement. The negative correlation between acquirer's MB ratio and CAR indicate the glamour acquirers receive a bad response from the market. The previous outcome holds water. While the coefficient of idiosyncratic risk is significantly positive in Table 11.2, it turns to significantly negative during the pre-announcement period. We assume that the "predictable firms" with lower idiosyncratic risk have pronounced pre-bid run-up, whereas the "unpredictable firms" with higher idiosyncratic risk have pronounced post-bid markup. This result indicates that the investors have difficulties with distinguishing the M&As rumor from noise of firms with high idiosyncratic volatilities. As a result, the stock price of a "predictable firm" will increase immediately when an acquisition rumor spread. The stock price of an "unpredictable firm", in contrast, will maintain at the same level and eventually increase after the announcement of the deal. The mixture of those two effects leads to a change of the coefficient among different event windows. In Panel C Penny stock subsample, however, the outcome changed a lot after switching event windows. We observe a compatible outcome that the idiosyncratic risk is negatively related to acquirer's performance during the pre-announcement period. Notably, the adjusted R-squared is a negative number, suggesting that the fitness of the regression model is worse.

7. Case Study

We conduct three out-of-sample case studies in order to examine the implications of the model estimated in the previous section and to explore the

unique features of each transaction which are neglected in the large sample analysis. The cases may also help us to reconcile the results of large sample analysis which are not consistent with our hypothesis. Moreover, it provides the opportunity to investigate the acquirer's performance during the post-acquisition period. One Canadian firm, Crescent Point Energy Corp., and two United States firms, Linn Energy, LLC and Continental Resources, Inc., are selected as our acquirers. As the size of the United States oil and gas firms is, in general, greater than the Canadian oil and gas firms in our large sample analysis, we chose a large Canadian firm relative to all Canadian oil and gas firms so that we could find a U.S. oil and gas firm with a comparable level of total revenue. We study three deals occurring in 2012 and 2013. Our aim is to present some common standards which can be used during the due diligence process in the oil and gas industry. Since the acquirer could complete the transactions in various ways, such as invest through a subsidiary, or convert to a trust, or purchase a target which is owned by someone on the acquirer's board, case studies could help us to investigate the connections between acquirer and target which is hard to realize in the large sample analysis due to the data limitations. In addition, the frequent announcements of buybacks and acquisitions of assets make the acquirer's stock price more volatile. As a result, we may not observe a significant CAR in the short term after the deal announcement despite the economic importance of the transaction. Before we step into individual cases, it is always better to have a general picture of the historical transactions made by each company. We examine all their transactions from SDC platinum between 2002 and 2013, including acquisitions of assets and buybacks.

Table 14: Deal Summary

This table presents total number and total value of the transactions announced between 2002 and 2013, extracted from SDC platinum. Acquisition of assets and buybacks are included. The transaction value includes all the payments made within six months of the announcement date. The total number and total value of mergers and acquisitions of majority interest are presented in brackets. CPG represents Crescent Point Energy Corp. CPG Trust represents Crescent Point Energy Trust. LINE represents Linn Energy, LLC. LNCO represents LinnCo, LLC. CLR represents Continental Resources, Inc.

<i>Panel A: Total Number of Transactions by Years</i>						
Year	CPG	CPG Trust	LINE	LNCO	CLR	Grand Total
2002	3 (0)					3 (0)
2003	2 (1)					2 (1)
2004		1 (0)				1 (1)
2005		4 (1)				4 (0)
2006		7 (2)	4 (0)			11 (2)
2007		3 (2)	5 (0)			8 (2)
2008		3 (1)	1 (0)		1 (0)	5 (1)
2009	4 (2)	2 (2)	3 (0)			9 (4)
2010	1 (1)	1 (1)	4 (0)			6 (2)
2011	1 (0)		6 (0)			7 (0)
2012	7 (3)		4 (0)		2 (1)	13 (4)
2013			1 (0)	1 (1)		2 (1)
Grand Total	18 (7)	21 (9)	28 (0)	1 (1)	3 (1)	71 (18)
<i>Panel B: Total Value of Transactions by Years (USD\$ Million)</i>						
Year	CPG	CPG Trust	LINE	LNCO	CLR	Grand Total
2002	7.03					7.03
2003	61.54					61.54
2004		49.70				49.70
2005		396.10 (81.77)				396.10 (81.77)
2006		686.25 (623.67)	870.00			1556.25 (623.67)
2007		486.75 (470.43)	2637.20			3123.95 (470.43)
2008		536.46 (379.59)	14.21		60.00	610.67 (379.59)
2009	1510.36 (861.23)	277.84 (277.84)	272.50			2060.71 (1139.08)
2010	85.67 (85.67)	1079.28 (1079.24)	730.00			1894.95 (1164.95)
2011	42.34		1209.00			1251.34
2012	2874.47 (1124.84)		2800.00		989.30 (340.00)	6663.77 (1464.84)
2013				3055.27 (3055.27)		3055.27 (3055.27)
Grand Total	4581.40 (2071.74)	3512.38 (2912.58)	8532.91	3055.27 (3055.27)	1049.30 (340.00)	20731.26 (8379.59)

Table 14 summarizes transactions completed by our acquirers and their subsidiaries. Crescent Point Energy Trust completed an array of transactions from 2004 to 2009 and converted to Crescent Point Energy Corp in 2009. The Trust ceased reporting to SEDAR in 2009. However, there is a transaction recorded under the Trust in 2010 which is actually conducted by Crescent Point Energy Corp., because the Trust made an equity investment in the target firm several years prior. LinnCo, LLC (LNCO) a subsidiary of Linn Energy, LLC, was established in 2012 to raise capital for the parent firm. As we can see from Table 14, the Canadian company and its subsidiary conducted numerous deals, more than the sum of the other two firms. The transaction value, however, is less than that of Linn Energy and its subsidiary. Furthermore, we notice that there are many acquisitions of assets and buybacks by all three companies, which will have an impact on the estimation of acquirer's CAR because it makes it hard to isolate the impact of a single transaction. It is also noteworthy that the transaction value from SDC is different from the M&As size obtained from Capital IQ.⁸

We concentrate on studying our three ultimate parent firms: Crescent Point Energy Corp. (CPG), Linn Energy, LLC (LINE), and Continental Resources, Inc. (CLR). Firm size of those three firms, measured by revenues in 2011, is similar as shown in Table 15. However, the approaches they used to select, structure, and complete a deal varies from one to another. The following in-depth investigations will unveil those details.

Table 15: Financials at Year-end 2011

The total revenue and gross profit of three acquirers examined in the case study, extracted from Capital IQ.			
	CPG	LINE	CLR
Currency	CAD	USD	USD
Total Revenue (\$ Million)	1822.496	1172.514	1679.838
Gross Profit (\$ Million)	1470.292	907.856	1370.157

⁸ SDC calculates the transaction value as the total value of consideration paid by the acquirer within six months of the announcement date of the transaction, whereas Capital IQ calculates the transaction value based on the transaction announced date.

7.1. Calgary-based Crescent Point acquires Calgary-based Wild Stream

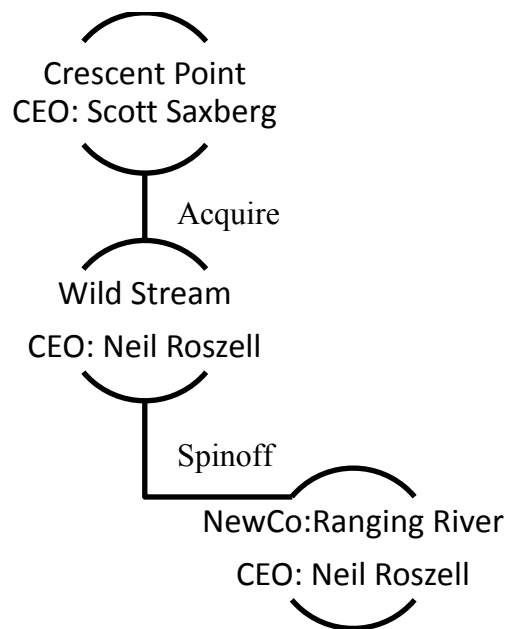
7.1.1. Case Background

Crescent Point Energy Corp. began trading on the Toronto Stock Exchange in 2001 and is engaged in acquiring, developing and exploiting oil and gas properties primarily in Western Canada. It also has assets in the United States which contributed approximately 11.6% of revenue at year-end 2013. The U.S. contribution was merely 0.6% at year-end 2011. The conventional oil and gas company was in the stage of expansion during past years. Crescent Point converted to a trust in 2003 after merging with Tappit Resources Ltd. and returned to being a dividend-paying corporation in 2009. In 2012, CPG led Canadian domestic transactions in the oil and gas industry with the acquisition of Wild Stream Exploration Inc (WSX), with properties in southwest Saskatchewan, for approximately \$610 million and the acquisition of Cutpick Energy Inc, with assets in Alberta, for approximately \$425 million. In total, CPG completed more than \$3 billion in acquisitions during 2012. We examine CPG's first and largest \$610 million acquisition of WSX in 2012 as the Canadian example.

With a \$1.1 billion capital expenditure budget, and plans to spend in Bakken in southeast Saskatchewan, Shaunavon in southwest Saskatchewan, Beaverhill Lake in Alberta and in North Dakota, CPG started its acquisition journey in 2012. Scott Saxberg, President, Chief Executive Officer and Director of CPG, said "The budget is designed to provide for another low-risk year of organic growth through the drill bit on our major oil resource plays in Saskatchewan while expanding our new emerging resource plays in Alberta and North Dakota." (News release, December 5, 2011, retrieved from SEDAR) He was a founder of Crescent Point in 2001 and has been CEO and president of CPG since 2003. The company expected to increase their average daily production by approximately 10% to 80,000

boe/d⁹. Nevertheless, it was just the beginning. On January 24th, 2012, CPG announced a \$610 million acquisition of publicly traded WSX with an exchange rate of 0.17 of a CPG share for each WSX share for all of the issued and outstanding shares of WSX, including approximately \$50.8 million of WSX debt. CPG increased their capital expenditure budget by \$50 million to \$1.15 billion. A spinoff Newco¹⁰, Raging River Exploration Inc., was expected to start operations after the deal completion, and be lead by WSX’s President and CEO, Neil Roszell, and four members from WSX’s management team. The corporate structure is shown in Figure 5.

Figure 5: The Corporate Structure after Deal Completion



The Newco would focus on exploration and development in the upper part of the Dodsland play. In the acquisition agreement, shareholders would also receive 1 Newco common share and 0.2 Newco purchase warrant for each common share

⁹ boe/d, barrels of oil equivalent, is generally deemed to have the same amount of energy content as 6,000 cubic feet of natural gas.

¹⁰ Newco means a new company, in this case, it is the raging river.

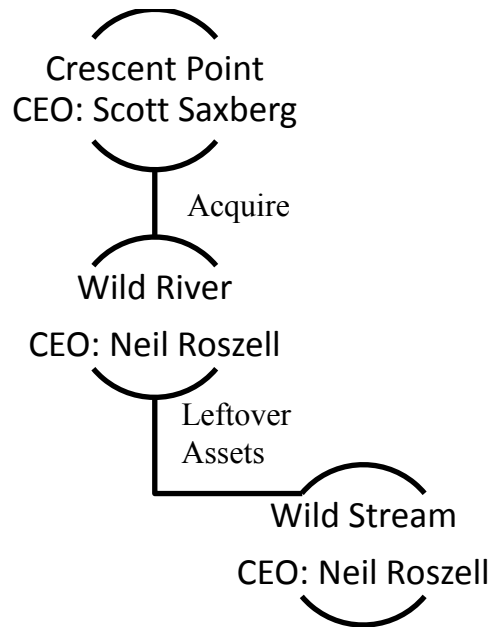
of WSX. If the agreement is completed according to the plan, the net asset value of Newco was expected to be \$120.4 million. The deal closed on March 15, 2012, allowing WSX shareholders to receive CPG's March 2012 dividend.

7.1.2. CPG's motivation for purchasing WSX

First, the location of WSX's assets is essential in this acquisition. According to CPG's news release on January 24, 2012, 91% of WSX's daily production, approximately 4,900 boe/d, is from the areas contiguous with those of CPG and 90% of which is comprised by oil. CPG also gains a large number of net sections of land and low-risk drilling locations next to their existing assets in the Shaunavon and Beaverhill Lake resource plays. From one point of view, this acquisition will further solidify CPG's dominant position in the Shaunavon resource play. From the other aspect, it will complement their existing position in the Beaverhill Lake resource play. The company expected to improve their average daily production in 2012 to 83,500 boe/d from 80,000 boe/d by capital expenditure in those two areas.

The second motivation is not as obvious. WSX is a leftover asset of Wild River Resources Ltd. CPG acquired this privately held firm three years ago and Neil Roszell was the President and Chief Executive Officer of Wild River in 2009 as shown in Figure 6. Based on WSX's news release on January 24, 2012, management believed that WSX's shareholders could continue exposure to the Shaunavon resource play with an anticipated monthly dividend of \$0.23 per share and direct participation in the development of Newco's Dodsland asset. They convinced the shareholders of WSX to support the acquisition agreement. In this case, we assume that CPG offered a fair bid price to WSX although those two plays attracts more investors relative to the situation in 2009. The tax pools are estimated at \$350 million.

Figure 6: The Corporate Structure of the Deal in 2009



More interestingly, a toehold strategy has been used frequently by CPG. In their prior transactions, they are likely to have a certain amount of target shares in order to be a holding company. This contrasts the toehold puzzle mentioned by Bulow et al. (1999) and Betton and Eckbo (2000). Bidders with toeholds are expected to be more aggressive, leading to a lower bid premium and a lower probability of deal completion. Betton et al. (2009) improved their former result in 2000. They stated that the optimal toehold is either zero in order to reduce the possibility of rejection or above average 9% in order to cover the costs of tender offer if the acquisition is rejected by the target management. CPG seems have a good understanding of this rule. For example, in the largest transactions among CPG's history, they held 21% equity interest of Shelter Bay Energy, Inc. before they announced the acquisition in 2010. The same thing happened in the deal after they acquired WSX. CPG announced the acquisition agreement of Reliable Energy Ltd. with 12.8% equity interest in March 15th, 2013. In the case of

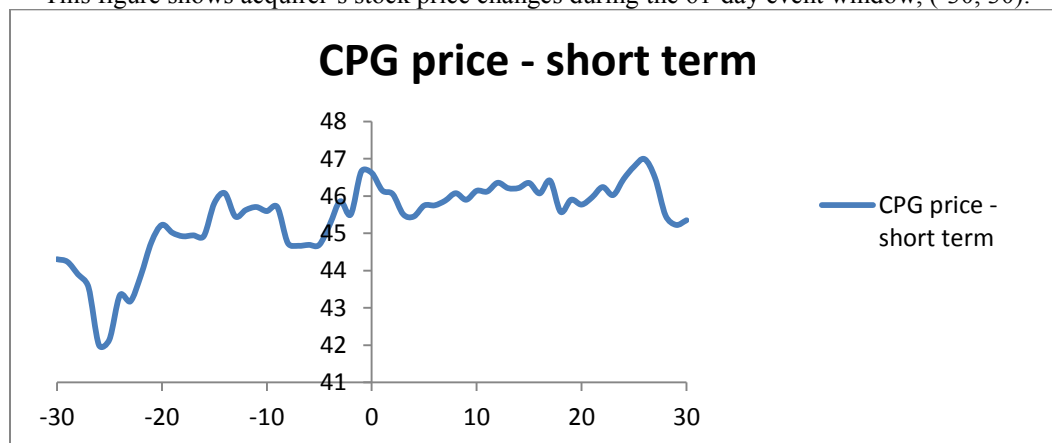
acquiring WSX, they use the zero optimal toeholds instead. In our large sample, however, it is not common to have toehold acquirers. Twenty five out of 317 transactions are conducted by toehold bidders. Moreover, the toehold structure is not used in the other two American cases.

7.1.3. Shareholder Value Implications

We extract the stock price from Bloomberg. It is noteworthy that CPG is listed on both the New York Stock Exchange (NYSE) and the Toronto Stock Exchange (TSX). Given the 3-month average volume as of April 4th, CPG is much more active in TSX with a volume 1,143,260 versus 44,292 on NYSE. We assume that the announcement date is Day 0 and counted based on trading days. The graph of stock price is shown in Figure 7.

Figure 7: CPG Stock Price in Short Term

This figure shows acquirer's stock price changes during the 61-day event window, (-30, 30).



We observe a sharp increase of CPG's stock price from Day -26 to Day -14. Later the stock price dropped and then increased again from Day -5. There is a decline after the announcement of acquisition agreement. A few days later, the stock price became volatile. Below is a summary of important news released by CPG:

Day -25 (Dec 15, 2011): The company confirmed the payment of Dec 2011 dividend for \$0.23.

Day -6 (Jan 15, 2012): The company confirmed the payment of Jan 2012 dividend for \$0.23.

Day 16 (Feb 15, 2012): The company confirmed the payment of Feb 2012 dividend for \$0.23.

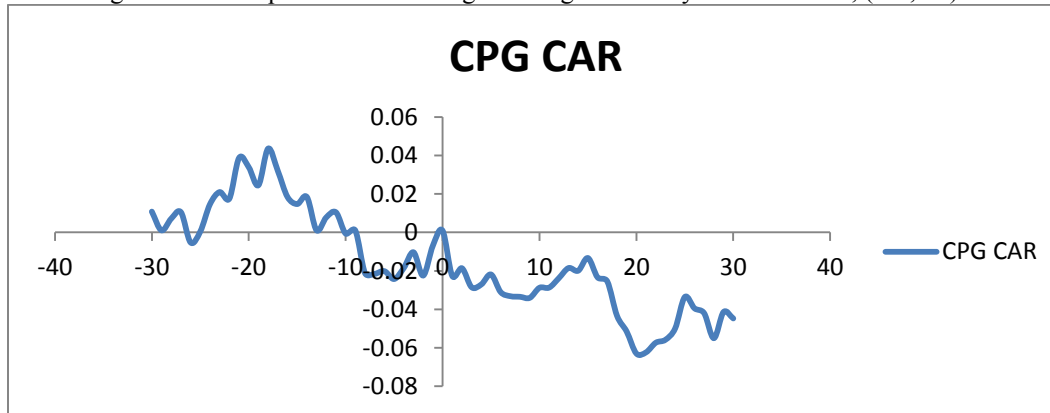
Day 17 (Feb 16, 2012): The company announced the Bakken acquisition, accompanied by \$525 million bought deal financing¹¹. On the same day, the company also announced a Manitoba asset acquisition which closed on Day 1 (Jan 25, 2012).

While the confirmation of dividends was followed by a stock price increase, the announcement of the Bakken acquisition and bought deal financing was associated with a drop in the stock price. We are interested in the cause of the stock price change around the deal announcement day, whether it is attributable to the volatility of CPG's stock or to the event itself. The cumulative abnormal return, displayed in Figure 8, could help us to explain CPG's stock performance. The announcement day is selected as day 0 and the 120-trading day estimation window, 05/26/2011 to 11/16/2011, is used to estimate the market model parameters. We calculate the t-statistic by dividing the abnormal return by its standard error from the estimation period. The t-statistic for multiple event days is computed as the sum of the t-statistics for each individual day divided by the square root of the number of event days.

¹¹ A bought deal is that a company issues new shares in a discounted price and an investment bank (or a group of investment banks) commit to buy those new securities, which could guarantee the company raising enough money.

Figure 8: CPG CAR in Short Term

This figure shows acquirer's CAR changes during the 61-day event window, (-30, 30).



The CAR during event window (-2, 2) equals -0.0181. However, we cannot calculate the total wealth loss based on this result, since the t-test of this 5-day window is not significant and the only significant value of abnormal return during our event window is on Day 1 (the abnormal return equals -0.0236 with a t-statistic equals -2.0296). In addition, this result could be affected by the closing of asset acquisitions as well, although there was little information related to the Manitoba deal before announcement. Given the formula established from our large sample analysis, the size difference of this deal is 0.95, which is located between median and upper quartile of our large sample distribution and is expected to contribute to a positive CAR. The market to book ratio in this case is 2.21, in the upper half of the Canadian subsample. It would be associated with a negative CAR. Additionally, the public target status would have a negative impact on CAR in Canadian market. These factors interweave together resulting in an ambiguous prediction of the CAR. The other explanation for the insignificant CAR is that there are many M&As and private placement deals occurring during our estimation window although we excluded CPG's largest acquisition deal in 2011, which will reduce the accuracy of the estimation.

7.1.4. Financial Fundamentals

Financial fundamentals represent the influence and real power of a company, especially in an industry like oil and gas. Several key statistics of CPG are summarized in Table 16.

Table 16: Financial Fundamentals of CPG

This table presents the financial fundamentals of CPG at the year-end before and after the acquisition announcement.

For the Fiscal Period Ending	12 months Dec-31-2011	12 months Dec-31-2012
<i>Currency</i>	<i>CAD</i>	<i>CAD</i>
Total Revenue	1,822.5	2,232.2
<i>Growth Over Prior Year</i>	<i>41.1%</i>	<i>22.5%</i>
Gross Profit	1,470.3	1,744.9
<i>Margin %</i>	<i>80.7%</i>	<i>78.2%</i>
EBIT	327.7	350.7
<i>Margin %</i>	<i>18.0%</i>	<i>15.7%</i>
Net Income	201.1	190.7
<i>Margin %</i>	<i>11.0%</i>	<i>8.5%</i>
Return on Assets %	2.5%	2.1%
Total Debt/Equity	18.8%	17.2%
Unlevered Free Cash Flow - Growth Over Prior Year	1,581.1% ¹²	154.9%
Diluted EPS	0.72	0.57
Full Time Employees	487	599
Production related Information		
Avg. Price/bbl, Oil (Hedged)	83.99	79.63
Avg. Price/bbl, Oil (Unhedged)	87.62	80.51
Total Production, Oil (MMbbls)	24.3	32.7
Production Growth, Oil	20.9%	34.7%
Total Oil Equivalent Production (MMboe)	26.9	36.0
Avg. Price/mcf, Gas (Hedged)	4.39	3.18
Avg. Price/mcf, Gas (Unhedged)	3.87	2.61
Total Production, Gas (Bcf)	15.8	19.8
Production Growth, Gas	9.8%	25.7%
Total Gas Equivalent Production (Bcfe)	161.6	216.3

¹² The UFCF is 192.6, 6.5, 109.6 and 279.4 million of CAD at the 2009, 2010, 2011 and 2012 fiscal year-end respectively. The UFCF is very low in 2010 due to the company tripled their capital expenditure in that year.

As we can see from Table 16, total revenue, gross profit and net income keep a strong growth rate in both our deal announced year and the year before. This Canadian firm also keeps a comparatively low leverage, represented by total debt over equity. A large amount of cash acquisition, \$1,855.7 million in 2012 compared with \$205.9 million in 2011, is accompanied by a dramatic increase of unlevered free cash flow according to its financials shown in Capital IQ. It supports the previous literature about firms in industry cluster with lower leverage and higher cash flow. We could also see a growth in full time employees approximately 23%. Their production data is in good condition as well. There is production growth in both oil and gas. Their 3.5 year price risk management program helps to hold a relatively stable oil price. Overall, the company is in a healthy financial condition before and after the acquisition. In addition, it is worthwhile to notice that several deals occurred in 2012 which also contribute to the final financial number of 2012.

7.1.5. Summary

When the acquirer selects a target, the geographically related oil resource plays is more crucial than the geographical proximity of the two headquarters of the acquirer and target. In other words, the synergy generated by soft information is not as critical as the strategic integration of production. Moreover, the Canadian acquirer shows their positive attitudes towards large size difference, which is consistent with our large sample analysis. In the same vein as Eckbo et al. (1990), a mixture of payment methods leads to a positive CAR, which is also consistent with the fact that the use of warrants has become more common recently. However it is not sufficient to judge a transaction simply based on the short term performance of the acquirer. Because we could see that the financial fundamentals of acquirer at the year after acquisition, year-end 2012, are still healthy and powerful. Notably, CPG's 3.5 years WTI hedge strategy helps them to maintain a

certain level of risk and provide continuous dividends. This strategy adopted in some O&G firms may help explain why we did not get a significant result of WTI crude oil index in our multivariate regression.

7.2. Houston-based Linn Energy and LinnCo acquires Denver-based Berry Petroleum

7.2.1. Case Background

Established in 2003, Linn Energy, LLC is an independent oil and gas company whose properties are diversified in the United States. LinnCo, LLC, a wholly-owned subsidiary of LINE, went public on October 12, 2012. LNCO focuses on raising additional equity capital for LINE to realize its acquisition plans. In the M&A history of LINE and its subsidiaries, only 3 out of 34 deals are acquisitions of another company. The deal value of these three acquisitions is not in excess of \$450 million for each transaction. In 2013, LINE and LNCO conducted their largest deal, \$4.3 billion acquisition of Berry Petroleum (BRY), in their corporate history. It was the only corporate acquisition by LINE and its subsidiaries in 2013 and was one of the top 10 oil and gas upstream¹³ transactions in the United States in 2013.

Given a title of “first ever acquisition of a public C-Corp¹⁴ by an upstream LLC¹⁵ or MLP¹⁶”, LINE and LNCO announced a definitive merger agreement with publicly traded BRY on Feb 21st, 2013. In the transaction, LNCO would issue 1.25 common shares in exchange for each common share of BRY. Then,

¹³ There are three segments in the oil and gas industry: the upstream involves exploring, producing, and the processing; the midstream involves storing, transporting and marketing; and the downstream involves refining and distributing to the retailer.

¹⁴ C-Corp is a corporation is taxed separately from its owners, which means there is a drawback of double taxation.

¹⁵ LLC is a limited liability company which combines the characteristics of a corporation and a partnership.

¹⁶ MLP is a master limited partnership which avoids corporate income tax.

BRY would be converted into a LLC. Eventually, LINE would acquire BRY as an asset using LINE units. The stock-for-stock merger was expected to complete on June 30, 2012. Mark E. Ellis, the Chairman, President and Chief Executive Officer of LINE and LNCO said, “We created LinnCo to provide an additional way for institutional and retail shareholders to invest in LINN and to give the company greater access to capital. In addition, as evidenced today with our announcement of a merger agreement with Berry, LinnCo has provided us with the right currency and structural flexibility to merge with C-Corps in a tax efficient manner.” (Press release, *LINN Energy Announces Fourth Quarter and Full-Year 2012 Results and 2013 Outlook*, February 21, 2013.) However, as Murphy's laws stated “Nothing is as easy as it looks.” It took them almost one year to close the deal. Events occurring during the acquisition period are summarized below and those events with stars are directly related with our case; February 21, 2013, the first announcement date of BRY’s deal, is set as Day 0.

*Day 0 (Feb 21, 2013): LINE and LNCO announced the merger deal and their “Fourth Quarter and Full-Year 2012 Results and 2013 Outlook”.

*Day 17 (Mar 18, 2013): LINE and LNCO announced that they have received early termination of the waiting period under the Hart-Scott-Rodino Antitrust Act, which became effective on Mar 13, 2013 (Day 14).

Day 30 (Apr 4, 2013): LINE’s subsidiaries announced a \$525 million deal to sell its oil-weighted properties in the Western Anadarko Basin to Midstates Petroleum Company LLC.

Day 45 (Apr 25, 2013): LINE and LNCO changed their distribution and dividend policies from quarterly payment of \$0.725 to monthly payment of \$0.2416 beginning in the second quarter of 2013. (Their dividend is slightly higher than CPG’s dividend.)

*Day 70 (May 31, 2013): LINE and LNCO extended the proposed closing date of BRY’s merger to the third quarter of 2013 because the Registration Statement was still reviewed by SEC.

*Day 91 (July 1, 2013): LINE and LNCO announced that an informal SEC inquiry had commenced, which was relevant to their financial disclosure and proposed BRY merger.

*Day 141 (Sept 11, 2013): LINE and LNCO announced that they received comments about the Amended Registration Statement on Aug 9, 2013 (Day 119)

and set the record dates regarding the BRY merger meetings as of Sept 30, 2013 (Day 154).

Day 142 (Sept 12, 2013): LINE and LNCO announced a \$525 million acquisition of Permian Basin Properties, which is expected to close during the fourth quarter of 2013.

*Day 174 (Oct 28, 2013): LINE and LNCO made an announcement about filing of Amendment No. 6 to the Registration Statement since they received comments on Oct 25, 2013 (Day 173).

*Day 178 (Nov 1, 2013): LINE and LNCO announced that there were no further comments on Amendment No. 6.

*Day 179 (Nov 4, 2013): LINE and LNCO announced the amended merger agreement with an increase of exchange ratio to 1.68 from 1.25. The total consideration is \$4.9 billion and the expected closing date was extended to Jan 31, 2014 (Day 239). They set the record date of Nov 14, 2013 (Day 187).

*Day 187 (Nov 14, 2013): LINE and LNCO announced that the final Registration Statement had been declared effective by SEC and set the merger vote date on Dec 16, 2013 (Day 208).

*Day 208 (Dec 16, 2013): LINE and LNCO announced the completion of BRY merger.

7.2.2. LINE and LNCO's Motivation for Purchasing BRY

The merger will benefit LINE's unitholders and LNCO's shareholders from various aspects. In the first place, BRY's assets are considered as "highly complementary assets" based on LINE and LNCO's press release as BRY's properties are close to LINE's existing assets and add a new core area in the Uinta Basin. The complete deal will increase LINE's production by 30% and proved reserves by 34%, approximately 240 MMcf/d¹⁷ and 1.65 Tcfe¹⁸. It will also contribute to the number of LINE's producing wells and net acres. Moreover, the majority production of BRY is oil. While the gas price is low during 2013, it is reasonable to acquire more oil properties.

¹⁷ 1 MMcf/d equals one million cubic feet per day.

¹⁸ 1 Tcfe equals one trillion cubic feet equivalents.

The second benefit is incurred via a deferred tax liability for LINE. As an investment vehicle for LINE, LNCO is responsible for raising capital and accomplishing acquisitions under the growth strategy of LINE. After the acquisition, BRY was converted to a LLC of LNCO. Later, by using a units-assets exchange, LINE owns BRY's assets without paying tax immediately. It is also tax-free for BRY's shareholders.

Last but not least, BRY's deal will contribute to LINE's distributable cash flow. As LINE stated in the Registration Statement, "the transaction is expected to be highly accretive to distributable cash flow per unit. In the first full year following closing, accretion is expected to be in excess of \$0.40 per unit". However, that is the most controversial part of this deal. According to a report from Barron's published on May 4, 2013, the author, Andrew Bary, thought that LINE was trying to "prettify its financial statement" through a large acquisition.

7.2.3. Shareholder Value Implications

We obtain the long term stock price and trading volume of both LINE and LNCO from Yahoo Finance. The abnormal returns and t-statistics are calculated through Eventus. We focus on merger-related events reported on either LINE's or LNCO's website. The press release date of deal announcement is referred to as the announcement date. The estimation window of LINE is from June 21, 2012 to December 13, 2012, including 120 trading days. The estimation period of LNCO is from its IPO, October 12, 2012, to December 13, 2012, including 40 trading days.

Figure 9: LINE and LNCO Stock Price in Long Term

This figure presents LINE and LNCO Stock Price from 1/2/2013 to 1/30/2014. The dot on the graph denotes the deal announcement date.

Panel A - LINE



Panel B - LNCO



Source: Yahoo Finance

When we shed some lights on the long-term stock performance, the stock price of respective companies sharply decreased on July 1, 2013. On that day, LINE and LNCO announced that SEC commenced an informal inquiry over their non-GAAP financial measures, hedging strategies and proposed merger with BRY. Although the companies said they remained confident of completing the merger and announced the monthly distribution and dividend on the same day, the market still took the inquiry as a bad signal, which increased the uncertainty of deal completion. With huge trading volume, LINE, LNCO, and BRY's stock price dropped 19%, 17% and 6%, respectively. It is not the first time that the public questioned LINE's non-GAAP accounting methods and hedging strategy. This class of questions could date back prior to the announcement of BRY's merger. On February 16, 2013, a week before the deal announcement, Andrew Bary published an article cast doubt on the hedging strategy of LINE which led to a decrease of LINE's stock price. But the merger announcement pushed up LINE's stock price. When SEC inquired about this problem, the market reacted extremely negative and followed with an array of class actions lawsuits against LINE and LNCO.

There was another sharp decrease in LINE and LNCO's stock price on May 31, 2013 due to the extension of deal completion date. It seems like the market perceived the merger deal as a value-increasing transaction because the market responded negatively to events that decrease the probability of successful completing the merger. Moreover, the stock price increased when there was an event increasing the possibility of deal completion. The relevant events are deal announcement (Feb 21, 2013), received comments on Amended Registration Statement (Sept 11, 2013), and announcement of amended merger agreement (Nov 4, 2013). However, it is hard to explain why the stock price fell after the announcement of the completion of the merger, although it bounced back three

days after the announcement. Table 17 presents LINE and LNCO's performance compared with the entire market.

Table 17: Chronology of major events in the merger of BRY by LNCO and LINE

The announcement date refers to the press release date. The abnormal return is calculated for a three-day window including the announcement date and the trading date just before and after the announcement date. The estimation window for LINE is from June 21, 2012 to December 13, 2012 and for LNCO is from October 12, 2012 to December 13, 2012.

Announcement date	LINE AR (t-statistic)	LNCO AR (t-statistic)	Event description
2/21/13	6.90%*** 3.741	7.32%*** 6.615	Deal announcement
3/18/13	-1.45% -0.786	-1.39% -1.257	Early termination of waiting period
5/31/13	-4.27%** -2.327	-1.63%* -1.519	Pending closing time of merger
7/01/13	-18.60%*** -10.129	-15.78%*** -14.725	Informal SEC inquiry commenced
9/11/13	14.35%*** 7.817	13.24%*** 12.354	Received comments about the Amended Registration Statement
10/28/13	-1.80% -0.980	-3.65%*** -3.411	Filed of Amendment No. 6
11/01/13	12.69%*** 6.908	10.77%*** 10.057	No further comments from SEC
11/04/13	10.78%*** 5.870	7.66%*** 7.154	Announced amended merger agreement
11/14/13	1.15% 0.628	-1.13% -1.059	SEC accepted the final Registration Statement and set vote date
12/16/13	-3.58%* -1.951	-6.26%*** -5.845	Deal completion
Total for the 27 event days through 12/16/13*	3.48% 0.628	-1.62% -0.564	*we excluded the three-day CAR of event happen on 11/01/13 (Fri.) because it is overlapped with the following event

The symbols *, **, and *** denote statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

The number and sign of abnormal return support our presumptions from Figure 9. Furthermore, whole process of merger contributes zero abnormal return towards both LINE and LNCO since the t-statistics are insignificant. Yet, there is a significantly positive abnormal return if we only consider the announcement of merger agreement and amended merger agreement. The size difference equals 0.55 if we take the difference of combined market value of LINE and LNCO

minus the first announced transaction value over the combined market value, which is located in the lower quartile of large sample. The MB ratio of LINE and LNCO are 1.87 and 1.04, respectively. These factors will not affect the U.S. acquirer's performance in our large sample. The 100% stock transaction of acquiring a public target receives a positive market response at the deal announcement period, which is consistent with our large sample analysis result.

7.2.4. Financial Fundamentals

Table 18: Financial Fundamentals of LINE and LNCO

This table presents the financial fundamentals of LINE (Panel A) and LNCO (Panel B) at the year-end before and after the acquisition announcement.

<i>Panel A: LINE</i>		
For the Fiscal Period Ending	12 months Dec-31-2012	12 months Dec-31-2013
Currency	USD	USD
Total Revenue	1,649.5	2,153.8
Growth Over Prior Year	40.7%	30.6%
Gross Profit	1,222.6	1,614.9
Margin %	74.1%	75.0%
EBIT	412.9	582.8
Margin %	25.0%	27.1%
Net Income	(386.6)	(691.3)
Margin %	(23.4%)	(32.1%)
Return on Assets %	2.7%	2.6%
Total Debt/Equity	136.4%	155.7%
Unlevered Free Cash Flow - Growth Over Prior Year	NM	NM
Diluted EPS	(\$1.92)	(\$2.94)
Full Time Employees	1,136	1,645
Production related Information		
Avg. Price/bbl, Oil (Hedged)	-	-
Avg. Price/bbl, Oil (Unhedged)	\$88.59	\$94.15
Total Production, Oil (MMbbls)	10.7	12.2
Production Growth, Oil	35.8%	14.7%
Total Oil Equivalent Production (MMboe)	40.8	50.0
Avg. Price/mcf, Gas (Hedged)	-	-
Avg. Price/mcf, Gas (Unhedged)	\$2.87	\$3.62
Total Production, Gas (Bcf)	127.4	161.7
Production Growth, Gas	99.4%	26.9%
Total Gas Equivalent Production (Bcfe)	245.0	300.1

<i>Panel B: LNCO</i>		
For the Fiscal Period Ending	12 months Dec-31-2012A	12 months Dec-31-2013A
Currency	USD	USD
Total Revenue	N/A	N/A
Growth Over Prior Year	N/A	N/A
Gross Profit	N/A	N/A
Margin %	N/A	N/A
EBIT	(1.8)	(2.1)
Margin %	N/A	N/A
Net Income	31.0	(912.4)
Margin %	N/A	N/A
Return on Assets %	N/A	(0.1%)
Total Debt/Equity	N/A	N/A
Unlevered Free Cash Flow - Growth Over Prior Year	N/A	N/A
Diluted EPS	\$2.88	(\$23.46)
Full Time Employees	N/A	N/A
Production related Information	N/A	N/A

Although LINE's total revenue increased 30.6%, its net income shrank approximately 32%. However, both LINE and LNCO paid approximately \$2.9 distribution/dividend per unit/share. Regardless of the negative net income and diluted EPS, LINE received ratings upgrades by both Moody's from B2 to B1 and Standard & Poor's from B+ to BB- after the completion of the merger. While the production continues to increase, LINE announced \$1.6 billion capital budgets devoted to expansion of both LINE and BRY assets in their 2014 outlook.

7.2.5. Summary

LINE perfects the sentence "Cash is king". LINE and LNCO increase their distributable cash flow per unit successfully through M&As. By employing an advanced investment vehicle and maintaining a high dividend, LINE and LNCO attracted many investors to their company. Then, they used the money to make new M&As. The market's support of this strategy is reflected in both the stock price increase and the positive abnormal return when the deal was announced. However, the net income based on GAAP accounting method tells another story. Despite the fact that LINE pays a higher distribution than CPG on a dollar basis,

its assets integration is far behind CPG as its properties are scattered throughout the U.S. It reminds us to be aware of the distinction between long-term benefits and short-term benefits.

7.3. Oklahoma City-based Continental Resources acquires Enid-based Wheatland Oil

7.3.1. Case Background

Relative to the acquirers in prior case studies, Continental Resources, Inc. (CLR) has a long history. It was founded in 1967 in Oklahoma by its current Executive Chairman and Chief Executive Officer, Harold G. Hamm. It focuses on exploring, developing and producing of crude oil and natural gas properties in north, south and east parts of the United States. Concentrated on organic growth, CLR conducted few M&As before 2010. However, the CLR's revenue from exploration and production activities shows exponential growth since 2010, accompanied by several mergers and acquisitions. The other unique characteristic of CLR is that it sells its crude oil production to midstream companies, and to end users. This makes the firm as a complete marketing chain in the oil and gas industry. In addition, the top shareholder of CLR is neither any companies nor other institutions as of April 2014. The insider, Harold G. Hamm, holds more than 75% of common shares outstanding which has market value of approximately US\$18.3 billion. (He owned 68% of CLR as of March 2012.) By studying this company, we are looking forward to have a better understanding of M&As reorganizing and corporate governance of a closely held public company conducting a non-arm's length transaction.

On March 28, 2012, CLR announced the acquisition of Wheatland Oil Inc (Wheatland) from Harold G. Hamm and Jeff Hume for \$340 million using a collar consideration structure. Harold G. Hamm, the Chairman of Board, CEO and

majority shareholder of CLR, owned 75% of Wheatland through his Revocable Inter Vivo Trust¹⁹ and Jeff Hume, the President and COO of CLR, owned the remainder of Wheatland. CLR would issue between 3.9 million and 4.25 million of its shares, subject to 20 day average of the daily sale prices prior to closing of the transaction. If the price of CLR is less than \$80, 4.25 million shares will be issuable. If its price is greater than \$87.18, 3.9 million shares will be issuable. During the bid period, there was a large amount of senior management transitions and a lawsuit with respect to the potential purchase. Several senior management transitions were announced from April to May 2012: Mike Cantrell joined CLR as VP of Government and Regulatory Affairs on April 11, 2012. Jose A. Bayardo joined CLR as Senior VP of Business Development on April 16, 2012. Jeff Hume, CLR's President and COO, named the role of Vice Chairman of Strategic Growth Initiatives and Rick Bott succeeded Hume's position on May 14, 2012. Kirk Kinnear joined CLR as VP of Oil Marketing Logistics. Ultimately, the purchase was completed on August 13, 2012 and 3.92 million shares of CLR were issued.

7.3.2. CLR's Motivation for Purchasing Wheatland Oil

As with former cases, the primary motivation of this merger is to add to CLR's ownership of properties in the Bakken field. With the help of technology development on horizontal drilling, CLR pursued acquisitions of additional interests in the Bakken field according to its 2010 Annual Report. In November of 2010, Wheatland asked CLR if they were interested in their assets. In November of 2011, CLR started to consider Wheatland's proposal and established a special committee. This purchase includes 37,900 net acres in the North Dakota and Montana Bakken play and interests in more than 1,000 gross wells, with net

¹⁹ Revocable Inter Vivo Trust is established to provide that the assets held therein are to be for the lifetime benefit of the Settlor. (Creighton Law Offices, 2014)

proved reserves of 17 MMBoe according to CLR's press release. The deal would be consistent with CLR's strategy of expansion.

The second motivation is that CLR has private information about Wheatland since those two companies are controlled by the same person, Harold G. Hamm. It means that CLR is more competitive as a bidder of Wheatland. However, the self-dealing issue occurred in this circumstance. Even though the beneficiaries, Harold G. Hamm and Jeff Hume, were excluded from the special committee, there was still a close tie between executive's private interests and CLR. A lawsuit, filed by a Louisiana police pension fund, alleged that CLR breached its fiduciary duties to minority shareholders on June 12, 2012. Harold G. Hamm, CEO of CLR and owned 75% of Wheatland, stated that Wheatland deal was similarly vetted and approved by the board of CLR, which would benefit all shareholders. In the end, the motion for a preliminary injunction of the deal was denied.

It is worthwhile to notice that CLR made a collar offer towards the Wheatland deal showing its willingness to complete the deal. According to Branch and Yang (2003) and Officer (2004), a collar consideration structure will increase the probability of merger completion in a stock payment. This structure decreases the likelihood of renegotiation before the deal completion. It also signals the uncertainty of both acquirer and target stock price, corresponding to high standard deviations from the market model in the following part.

7.3.3. Shareholder Value Implications

We examine the long-term stock price and trading volume to show the tendency of CLR's performance. Then, we compute the short-term cumulative abnormal return of the merger deal to test the effect of the event.

Figure 10: CLR Stock Price in Long Term

This figure presents CLR Stock Price from 8/21/2011 to 10/1/2012. The dot on the graph denotes the deal announcement date.



Source: Yahoo Finance

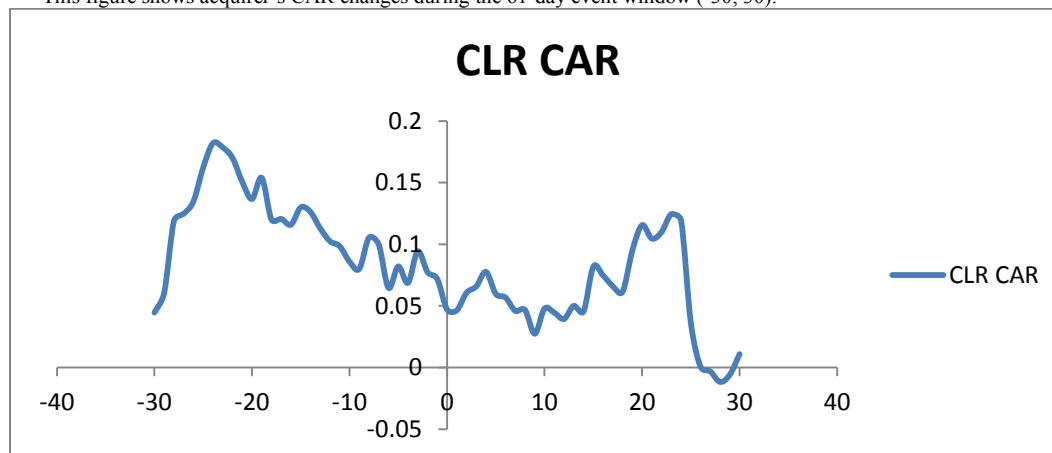
We conclude that the stock price of CLR is quite volatile from August 1, 2011 to October 1, 2012 from Figure 10. Various kinds of news drive the price change. For example, CLR received two violation notices from state Health Department on November 1, 2011, leading to a drop of stock price; the CEO of CLR, Harold G. Hamm, was named as energy adviser to presidential candidate Mitt Romney on March 1, 2012, leading to a decline of stock price; the announcement of 2012 first quarter result indicated that sales of oil and gas missed the firm's expectations on May 2, 2012, leading to a decline of stock price; a series of turnover in management team on April 11, April 16, May 14, and May 25 of 2012, leading to an increase of stock price. There are still lots of other news during the estimation period and our event period.

Due to the high volatility of CLR's stock price, it is hard to obtain a significant t-statistics in standard event study. If we employ a 120-day estimation window

from August 1, 2011 to January 23, 2012 and a 61-day event window from February 14, 2012 to May 10, 2012, we could get CAR shown in Figure 6. The t-statistics of CAR is not significant in (-1, 1) and that of abnormal return is also not significant in the individual days from Day -2 to Day 2. However, we could obtain a significant abnormal return on the deal announcement day if we choose a relatively quiet period of CLR, from October 5, 2012 to December 30, 2012, as our 61-day estimation window.

Figure 11: CLR CAR in Short Term

This figure shows acquirer’s CAR changes during the 61-day event window (-30, 30).



As we can see from Figure 11, the abnormal return on event date is negative, consistent with our previous conclusion that a private target status has a negative impact on acquirer’s performance. However, a 100% stock payment transaction is expected to bring a positive CAR to the acquirer. More interestingly, CLR moved its headquarters from Enid to Oklahoma City on March 27, 2012, the day right before deal announcement. The case is not a local deal according to our large sample analysis criteria. Nonetheless, it is actually occurred in the same city.

7.3.4. Financial Fundamentals

Table 19: Financial Fundamentals of CLR

This table presents the financial fundamentals of CLR at the year-end before and after the acquisition announcement.

For the Fiscal Period Ending	12 months Dec-31-2011	12 months Dec-31-2012
<i>Currency</i>	<i>USD</i>	<i>USD</i>
Total Revenue	1,679.8	2,418.5
<i>Growth Over Prior Year</i>	<i>73.2%</i>	<i>44.0%</i>
Gross Profit	1,370.1	1,962.4
<i>Margin %</i>	<i>81.6%</i>	<i>81.1%</i>
EBIT	743.1	1,164.6
<i>Margin %</i>	<i>44.2%</i>	<i>48.2%</i>
Net Income	429.1	739.4
<i>Margin %</i>	<i>25.5%</i>	<i>30.6%</i>
Return on Assets %	10.1%	9.8%
Total Debt/Equity	54.3%	111.9%
Unlevered Free Cash Flow - Growth Over Prior Year	(56.7%)	(105.9%)
Diluted EPS	\$2.41	\$4.07
Full Time Employees	609	753
Production related Information		
Avg. Price/bbl, Oil (Hedged)	-	-
Avg. Price/bbl, Oil (Unhedged)	\$88.51	\$84.59
Total Production, Oil (MMbbls)	16.5	25.1
Production Growth, Oil	39.3%	52.0%
Total Oil Equivalent Production (MMboe)	22.6	35.7
Avg. Price/mcf, Gas (Hedged)	-	-
Avg. Price/mcf, Gas (Unhedged)	\$5.24	\$4.2
Total Production, Gas (Bcf)	36.7	63.9
Production Growth, Gas	53.2%	74.0%
Total Gas Equivalent Production (Bcfe)	135.5	214.3

CLR has a rather excellent financial statement with a steady marginal growth of total revenue and net income. The diluted EPS increased dramatically in the year following the merger deal. It also receives a BBB- credit rating from S&P. Comparing with LINE, CLR put more focus on organic growth of production development. Despite a high turnover rate of managements during the merger period, CLR displays a strong growth trend with a corporate restructuring in long-run.

7.3.5. Summary

Unlike the other American deal, CLR concentrates on exploring and developing its core assets in Oklahoma. Although there is a close tie between its executives and the Wheatland deal, this merger provides CLR more access to the Bakken oil play and increased its production level. It is a successful corporate restructuring based on CLR's financial fundamentals and stock performance in long term. As expected, the cumulative abnormal return in the short term is not the exclusive benchmark of a successful mergers and acquisitions. Since it is widely used in academic research, we might overestimate its function of judging whether the deal is successful or not.

In summation, these three out of sample case studies broaden our perspectives on firm specific characteristics. The geographical proximity of working fields is crucial for the O&G acquirers, which is the source of cost synergy. Furthermore, the ownership structure would have a strong impact on management's decision. It seems that the M&A will progress smoothly if the management of the target would obtain a competitive position in the acquirer or in the Newco. Last but not least, the interconnection between corporations and their boards will trigger an M&A transaction. However, this relation is hard to capture without an in-depth investigation and evaluation.

8. Conclusion

With a preliminary research of M&As in the O&G industry between 2002 and 2011, we know that countries with abundant oil and gas resources, such as Canada and United States, have a large volume of transactions. The O&G acquirers tend to invest in the same or related industry and conduct more assets acquisitions. The acquirers who engage in transactions including the change of corporate control are mostly public firms and willing to invest in private, public

and subsidiary target. As for North American deals, we find that Canadian acquirers are more likely to invest in horizontal, local target and public target than U.S. acquirers, along with a higher complete rate. There are also more penny stocks and illiquid stocks in Canada because the firm size is larger in the United States.

We conclude that the low stock price of penny stock is not because of the underestimation of the firm performance. In addition, penny stocks face a higher level of idiosyncratic risk and illiquidity issue. As for those non-penny stocks, the U.S. market react positively towards stock payment in the large sample analysis, which is supported by case study. We suggest that the acquirer takes it as a method to share the risk with the target, accompanied by a collar consideration structure to protect the target's benefits according to the case study. In the Canadian market, the value firm generate more abnormal return relative to the glamour firm. The case study supports that the merger conducted by the Canadian value firm has a better long-term performance. Furthermore, the result indicates that the synergy generated from the geographical proximity of headquarters is not significant and even negative for penny stock. Our case studies suggest the geographical proximity of the oil and gas field is more important to the acquirer.

By employing different event windows, the Canadian subsample results show that the idiosyncratic risk is negatively related to acquirer's CAR before the deal announcement and positively related to acquirer's CAR at the deal announcement, indicating that the spread of rumor will push up the stock price of the "predictable firm" before the deal announcement and the stock price of the "unpredictable firm" will increase after the confirmation of the rumor, in other words, the announcement of the deal. We conclude that the market react differently towards the rumor when the level of idiosyncratic risk varies.

9. Further Research

First of all, it is worthwhile to investigate the effect of the geographical proximity of the oil and gas fields on acquirer's performance since it is expected to be the source of cost reduction. The acquirers emphasize the relation between the target's assets and their existing properties in the proxy statement. Then, they elaborate how the acquired firm would contribute to the acquiring firm's production. As with the situation shown in our cases, bidder's acquisition strategy always includes acquisition of assets for controlling the working interests in certain regions.

Secondly, it will be interesting to consider the effect of assets acquisition in future study, especially for a large-scale industry like oil and gas. Actually, there are approximately 50% transactions are acquisitions of assets over the period 2002-2011 in the oil and gas industry. It is possible to find two transactions occurring on the same date, however, the one with small transaction value is acquisition of corporate and the other one with large transaction value is acquisition of assets.

In addition, the ownership structure and the deal structure are two important determinants that should also be taken into consideration. In the third case study, we notice that the CEO is the largest shareholder of the acquirer. The concerns from a management who holds the majority of shares should be distinctive from a management without shares in the acquirer. Also, we observe the use of collar consideration structure in the third case and the application of toehold strategy in our first case study. These deal structures show the acquirer's determination to success a deal. As a result, the likelihood of deal completion should increase. It would be interesting to see the market reaction towards various deal structure.

Last, the interconnections between the acquirer and the target will have an impact on the final decision of the M&A, especially in a complex industry like O&G. Different types of relation is existing in all three case studies. Given that the O&G firms are clustered in several provinces/states with abundant natural resources, it is not surprising that the management from different companies knows each other and may have a further connection.

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Appendices

Appendix A.1: A snapshot of horizontal merger difference between U.S. and Canada in mining and manufacturing industry

Table I
Industry Classification of the 471 U.S. and Canadian Mergers in the Sample

A horizontal merger is one where the major four-digit SIC code of the bidder and target firms overlap. The table sorts the mergers based on the first two digits of the target's major four-digit code. The total sample period is 1963–1982.^a

Target's Major Two-Digit SIC Industry	266 U.S. Mergers			205 Canadian Mergers	
	Horizontal Unchallenged	Horizontal Challenged	Non-Horizontal	Horizontal	Non-Horizontal
10 Metal mining	2	1	1	6	4
13 Oil and gas extraction	30	1	7	24	11
14 Mining of non-metallic minerals	0	1	1	0	0
20 Food and kindred products	10	7	5	22	10
21 Tobacco manufacturers	0	1	0	0	0
22 Textile mill products	7	0	4	3	2
23 Apparel and other textile products	5	1	0	1	0
24 Lumber and wood products	4	0	1	9	6
25 Furniture and fixtures	0	0	4	4	4
26 Paper and allied products	7	4	6	6	2
27 Printing and publishing	5	2	1	13	13
28 Chemicals and allied products	4	3	3	5	12
29 Petroleum and coal products	2	1	1	1	1
30 Rubber products	1	4	1	1	2
31 Leather and leather products	2	0	1	0	0
32 Stone, clay and concrete products	4	4	5	6	3
33 Primary metal industries	7	4	10	1	3
34 Fabricated metal industries	3	6	4	6	10
35 Machinery, except electrical	8	12	6	0	0
36 Electronic machinery	6	5	5	5	4
37 Transportation equipment	3	6	4	1	2
38 Measuring and controlling instruments	6	0	3	0	0
39 Miscellaneous manufacturing	0	2	0	1	0
Total	116	80	70	116	89
Average number of rivals per merger ^b	15	5	10	9	7

^a The 266 mergers between U.S. firms is from Eckbo (1985) and covers the period 1963–1981. The 205 mergers between Canadian firms are from the period 1964–1982 and represent a subsample of the 247 horizontal and 626 nonhorizontal cases in Eckbo (1986), selected subject to the requirement that the merger was announced in the *Globe and Mail* and that it was possible to identify at least one nonmerging industry rival whose shares were trading at the Toronto Stock Exchange at the time of the merger announcement.

^b Nonmerging industry rivals are identified using the major four-digit SIC code of the target firm, augmented to a five-digit code based on information on the target's product line, subject to the requirement that the rival is traded on the stock exchanges in New York or Toronto. See the text for data sources and selection procedures.

Reprint from: Eckbo (1992)

Appendix A.2: Variable Definitions

Variables	Definitions	Data Sources
<i>Panel A - measures of acquisition performance</i>		
Status	Binary variable=1 if deal is completed; 0 otherwise	SDC
ACAR	Cumulative abnormal percentage return for acquirer	CRSP; CFMRC
<i>Panel B - firm and deal characteristics</i>		
Sizediff	Market value of acquirer minus transaction value of the deal then scaled by market value of acquirer	Compustat; SDC
MB ratio	Acquirer's closing price of the day before deal announcement divided by the book value per share of the year before deal announcement	CRSP; CFMRC; Compustat
SIC	Binary variable=1 if target and acquirer are in the same industry; 0 otherwise	SDC
Geo	Binary variable=1 if target and acquirer are in the same city; 0 otherwise	Compustat; SDC; Factiva; EDGAR; Sedar; Capital IQ;
Target Public	Binary variable=1 if target firm is public firm; 0 otherwise	SDC
Target Parent Public	Binary variable=1 if target's ultimate parent firm is public firm; 0 otherwise	SDC
Stock	Binary variable=1 if payment is 100% stock payment; 0 otherwise	SDC
Illiquidity	Binary variable=1 if usable returns from estimation window less than 120 in the U.S. subsample or usable returns from estimation window less than 100 in the Canadian subsample; 0 otherwise	Eventus; CFMRC
AdjRsqr	The adjusted r-squared of the estimation window is obtained from event study	Eventus; CFMRC
Idiosyn	Idiosyncratic risk equals $\ln(\frac{1-R^2}{R^2})$; the R^2 of estimation window is obtained from event study	Eventus; CFMRC
Penny Stock	Binary variable=1 if acquirer's closing price of the day before deal announcement less than \$5; 0 otherwise	CRSP; CFMRC
Cash BS	Cash from balance sheet	Compustat
Leverage	Total liabilities over stockholders' equity	Compustat
Canada	Binary variable=1 if acquirer is from Canada; 0 otherwise	Compustat
<i>Panel C - market characteristics</i>		
CL1	Generic 1st crude oil futures price	Bloomberg
Percentage change of CL1	the CL1 price at day 0 divided by price at day -10, then minus 1	Bloomberg
Contraction	Binary variable=1 if mergers and acquisitions happened in the contraction period; 0 otherwise	National Bureau of Economic Research website
Lagged GDP	Last year GDP divided by the year before GDP	World Bank website

Appendix A.3.1: Sample Distribution Classed by Penny Stock

This table presents our final sample distribution of numerical variables, including minimum, lower quartile, median, upper quartile, maximum, mean and standard deviation, categorized by penny stock. Sizediff represents the size difference between acquirer and target scaled by acquirer's size. MB_ratio represents the market to book ratio of acquirer. Acquirer size represents the log of market value of total assets in the year-end before announcement. Leverage represents the acquirer's total liability divided by its book equity. Idiosyn represents the idiosyncratic risk of acquirer. AdjRsqr is obtained from the event study of acquirer.

	Variable	N Obs	Min	25%	Median	75%	Max	Mean	Std Dev
Penny Stock	Sizediff	68	-5.77	0.24	0.71	0.86	1.00	0.32	1.10
	MB_ratio	68	0.14	0.76	1.42	2.62	36.03	2.75	4.90
	Acquirer size	68	1.48	3.47	4.17	4.96	6.52	4.19	1.11
	Leverage	68	0.01	0.25	0.59	1.16	42.96	1.63	5.29
	Idiosyn	64	0.07	1.87	2.85	4.69	10.20	3.38	2.00
	AdjRsqr	68	-0.01	0.00	0.04	0.12	0.48	0.07	0.09
Non-penny	Sizediff	249	-1.77	0.62	0.89	0.98	1.00	0.73	0.40
	MB_ratio	249	0.41	1.65	2.14	3.02	20.02	2.69	2.13
	Acquirer size	249	3.39	6.27	6.99	8.48	12.89	7.44	1.79
	Leverage	249	0.02	0.60	0.98	1.38	5.51	1.13	0.77
	Idiosyn	243	-1.31	0.82	1.48	2.24	7.21	1.65	1.42
	AdjRsqr	249	-0.02	0.08	0.17	0.30	0.79	0.21	0.18

Appendix A.3.2: Difference in means and medians Classed by Penny Stock

This table presents the differences, Penny Stock minus Non-penny, in means and medians, categorized by variables from A.3.1. We use a t-test to examine the significance of differences in means and a Wilcoxon two-sample test to examine the significance of differences in medians. The p-values of the t-test and the Wilcoxon two-sample test are shown in the brackets.

Variable	Diff. of means	P-value	Diff. of medians	P-value
Sizediff	-0.40***	(0.0000)	-0.18***	(<.0001)
MB_ratio	0.06	(0.8783)	-0.72***	(<.0001)
Acquirer size	-3.25***	(0.0000)	-2.82***	(<.0001)
Leverage	0.51	(0.2137)	-0.40***	(0.0001)
Idiosyn	1.73***	(0.0000)	1.36***	(<.0001)
AdjRsqr	-0.15***	(0.0000)	-0.13***	(<.0001)

The symbols *, **, and *** represent statistical significance at the 0.10, 0.05, 0.01 levels, respectively.

Appendix A.4: A snapshot of bidder announcement returns categorized by target public status

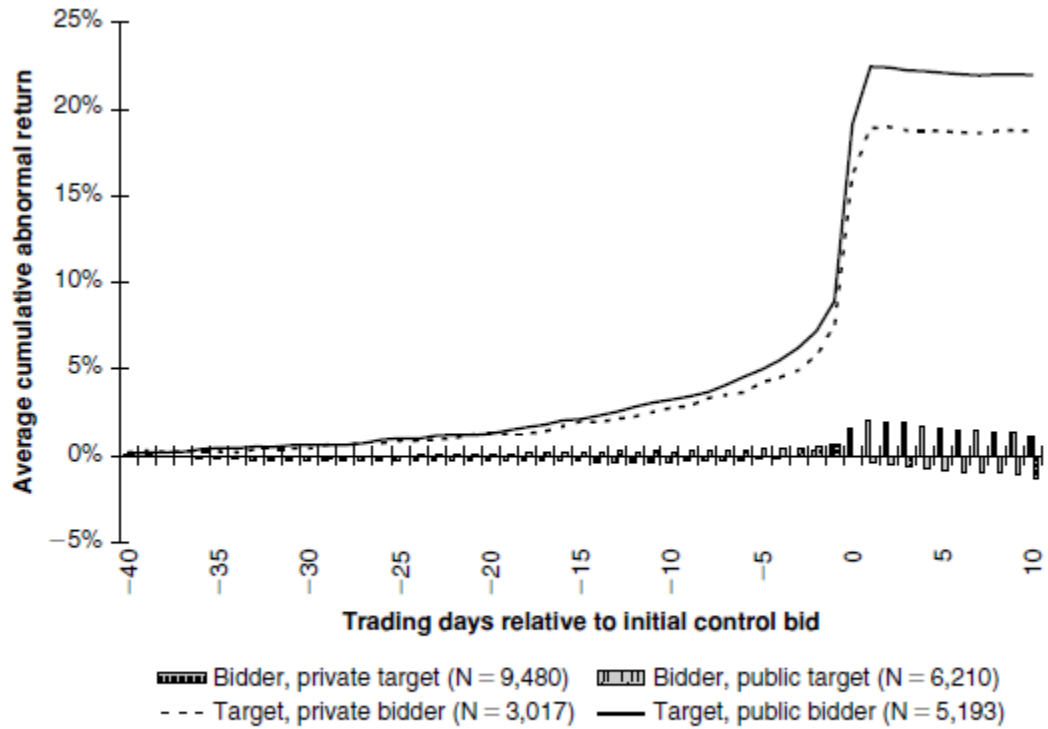


Fig. 10. Percent average cumulative abnormal stock returns to targets and initial bidders from day -40 through day 10 relative to the initial control bid. U.S. targets 1980–2005.

Reprint from: Betton et al. (2008)