Takeovers in the Energy Sector;
A Commodity Price Driven Acquisition Hypothesis[1]

ABSTRACT

We offer a new theoretical proposition, a "commodity price driven acquisition" hypothesis for takeovers. We apply this to the oil and gas industry in which managers time commodity prices to make their mergers and acquisitions although it would be applicable to commodity producing industries. We find strongly supportive evidence for this motivation for takeover, evidenced by energy prices having a feedback relationship with the number of M&A deals over time. Energy prices have a feedback relationship with merger performance. We find significant negative announcement returns for acquirers and positive returns for target firms. Moreover, takeover performance is influenced by changes in oil and gas commodity prices. This suggests that market timing has negative takeover valuation consequences consistent with overvaluation of takeover benefits. Our overall findings are consistently supportive of this commodity price driven motivation for takeovers.

INTRODUCTION

Over the past decade, the oil and gas industry in Canada has taken centre stage economically. In this same time frame, the global economic stage has become increasingly dominated by the rise of emerging superpowers such as China and India. These rapidly-expanding economies are consuming resources at a growing rate, and are forced to look beyond their borders to meet their energy needs. International oil majors are pouring money into large projects to extract this oil. The combination of these and other factors have left Canadian energy companies in a very favorable position, with enormous reserves of oil. The energy sector has evolved to become vitally important to the economic prosperity of Canada and its relationship with the United States and intense changes arising from takeovers have received media interest, yet there is a paucity of research on mergers and acquisitions in the energy sector.

Another reason for why the oil and gas industry should be studied is that there may be a different motivation for M &A from the general literature. For instance, Ferguson and Popkin (1982) propose that a unique motivation for the oil industry is for the purpose of purchasing reserves. This implies that the market price of a target should equal the market value of it's reserves. However, targets are offered premiums above market value. They explain that acquirers pay more for these targets because the oil reserves offer depreciation tax shields which add value to the firm.

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There is a large body of academic studies regarding merger and acquisition performance, even within some specific industries, such as banking and financial services. Perhaps due to reasons of data availability, the empirical literature on takeovers and performance largely passes over the oil and gas industry. M & A in the oil and gas industry merits further academic study notwithstanding the abundant literature of M & A. This is because takeovers in this industry reflect responses to fundamental changes in the economy. This broadens the rather narrow firm level and managerial view in this literature of value creation or value destruction as motivation for M & A. This paper examines the influence of energy prices, a fundamental factor in the economy, in influencing mergers and acquistions activity, performance, motivation and timing for takeovers. Weston et al. (1990) note recent takeover activity has been high in industries undergoing deregulation, experiencing oil price shocks, and otherwise facing structural alteration. For example, Jensen (1993) states that oil price volatility stemming from the 1973 OPEC boycott and continuing in the 1979 Iran embargo is one shock driving takeover activity during the 1980s. This shock not only directly affects the oil and gas industry itself, but also the structure of other industries in which energy is a key input. In examining takeover patterns over time in 51 industries, Mitchell and Mulherin (1996) note that takeover activity clusters in a few particular industries, including oil and gas. More broadly, they conclude that the rate of takeover activity is directly related to economic shocks borne by these industries. The reason is that mergers and leveraged buyouts are often the least-cost and least-time to respond to the changes brought about by economic shocks. Mitchell and Mulherins' (1996) theory that M & A are driven by broad fundamental factors have general implications towards stock price return effects of takeover announcements, corporate takeovers, and the timing of takeover waves.

Our contribution to the extensive literature on M&A is offering a new motivation which we shall call "commodity price driven acquisitions." This motivation is similar to stock market driven acquisitions as theorized by Shleifer and Vishny (2003) in which managers time equity prices in making takeover deals. Indeed, Harford (2005) is able to test the distinction between the business environment shocks and market mis-valuation explanations of takeovers. He shows that industry and liquidity have greater determination of takeovers than misvaluation. This supports our notion that the oil and gas industry would respond to environmental shocks, such as the strong rise in energy prices, with takeovers. Hence, managers in the oil and gas industry time energy prices in making takeover deals. This theory offers a new perspective to explain takeover waves. We explore our theoretical proposition that firms in the energy industry are uniquely motivated to acquire other firms to take advantage of high energy commodity prices. Hence, given the implications of managerial market timing, we test the relationship between energy prices and takeover activity, and between energy prices and takeover performance.

We find empirical evidence strongly supportive for commodity price driven acquisitions. Energy prices have Granger causality on the number of M&A deals over time in the oil and gas industry. Equally important, energy prices have Granger-causality on takeover performance of acquirers and targets. The relationship between energy prices and M & A deals, as well as energy prices and takeover performance, is intriguingly a feedback relationship. M & A is an industry restructuring response to high energy prices, and in turn, the restructuring seems to affect prices. Oil and Gas price changes are the variables of interest which are core to our theoretical proposition. That is, rising commodity prices, influence managers in making takeovers. We find that oil price changes do relate to takeover performance; a result of price

changes in oil and gas to lead some managers to overvalue their own firm, their target and the benefits of the takeover. This is consistent with the theoretical consequence of stock market price driven acquisitions (Shleifer and Vishny, 2003). Consequently, at the precise event day of takeover, the overvaluation of the takeover or managerial hubris (Roll, 1968) are revealed by a realistic and efficient market.

We also examine announcement return performance of Canadian, US and foreign M & A deals in the oil and gas industry. Interesting similarities and differences in the takeover return patterns are found. Our event-study shows that shareholders of US target firms gain more significant abnormal returns than those of Canadian target firms. The abnormal returns for target shareholders of Canadian firms with a Canadian acquirer are about one half of that for target shareholders with a foreign acquirer. The results for US target firms are the opposite. The abnormal returns for target shareholders of US firms with an US acquirer are almost double that for target shareholders with a foreign acquirer. In both countries, there are higher chances of gaining versus losing when the acquirer is foreign. Furthermore, we find negative abnormal returns for Canadian and US acquiring firms. The results suggest support for a redistribution of wealth between shareholders of acquiring firms and target firms.

The next section provides a brief background of the oil and gas industry in Canada. Next is coverage of relevant literature on takeovers, followed by our methodology and hypothesis section. The next section describes our sample and data collection method. A results and discussion of each main finding follows, and the last section concludes.

The Canadian Oil and Gas Industry

In recent years, Canada became noticed for having vast reserves of oil and natural gas, the likes of which are no longer found anywhere else in the world. With newspapers devoting more and more attention to the energy sector and the price of oil and the value of the Canadian Dollar rising and falling in unison, there is little question as to the current importance of Canada's energy resources to its national economy. Prime Minister Steven Harper termed "Canada is now an energy superpower" at the last G8 meeting. Canada's economic base is shifting to energy and more to the West, namely Alberta, the center of oil sands production. Take the example of Alberta's provincial debt, which stood at $22.7-billion in 1994. In a mere ten years the energy revenues allowed the province to completely retire this debt. The hot energy economy until 2008 has not been limited to one province either; northern British Columbia and Saskatchewan have extensions of the Alberta oil field, Newfoundland holds offshore oil deposits, and the Northwest territories have vast stretches of barren land with unexplored potential for oil. It is clear that the Canadian economy is markedly different than it once was, even just five years ago.

The rise of emerging powers such as China and India and their rapidly-expanding economies began consuming resources at a growing rate. During which the supply of the world's "easy oil" (in convenient deposits just below the earth's surface) is limited and shrinking. As oil approaches the one hundred dollar a barrel mark, the oil previously considered too costly to extract, located too deep in the ground is now a feasible source of energy supply. Likewise, even the sticky oil-clay of Alberta's oil sands deposits are now a profitable source of

oil. The combination of these factors places Canadian energy companies in a very favorable position, with huge reserves of valuable oil. Increasingly, fast growing and giant economies like China and India are looking beyond their own borders to meet their energy needs.

As domestic firms are taken over by foreign entities, the control of Canadian resources shifts into foreign hands. With interest from foreign corporations comes concern for foreign control of Canadian energy resources. Over the past twelve months, Canetic Energy, Vault Energy, TransAlta Power, and PrimeWest Energy have all been targets of takeover bids. The latter two firms are bought out by Chinese and Emirian firms. This concern over foreign control is also shared in the United States. In 2005, China National Offshore Oil Corp (CNOOC) failed to take over California-based oil company Unocal, due to the concerns within the Bush administration and the US Congress that Chinese government control of a major US oil corporation would undermine American "national interests". Governments need to find a balance between popular Canadian views of preserving Canadian control of our natural resources and giving control of natural resources to multinational corporations; this balance is not easily resolved. Indeed, this is a real challenge in which Alberta Premier Ed Stelmach is conflicted between the views of oil and gas community and Albertan citizens in deciding on whether to take greater royalties from oil extraction. Some countries have enacted legislation or exerted their influence over foreign ownership of businesses of national importance. For example, Venezuelan President Hugo Chavez has taken the approach of nationalizing his country's oil sector away from the international oil majors. In Canada, regulation is extensive in such businesses as railroads and telecommunications, but the energy resource sector is not as highly regulated.

LITERATURE REVIEW

Existing literature on oil and gas takeovers in finance journals dates back to 1999 and earlier. In the very limited sample of M&A literature specific to the oil and gas industry, Weston et al. (1999) note a high degree of consolidation of the world oil industry throughout the 1990s. This article also considers the case of a single merger between BP Petroleum and Amocos' stock return performance. Mitchell and Mulherin (1996) find that volatile oil prices have a positive effect on takeover activity in the 1980s particularly in oil related industries (Petroleum producing) and dependant industries (like transportation). Servaes (1994) finds evidence from a subsample of oil and gas takeover targets that they tend to overinvest their capital expenditures in the years leading up to takeovers. This evidence differs from his whole sample of 700 U.S. target companies in which there is no evidence of overinvesting. Thus, they find no support for the motivation for takeovers arises from the need of the acquirer to reduce overinvestment in capital expenditures in the years leading up to takeover. Other earlier studies in this literature examine management responsibility in takeovers (Regan, 1984), case studies on oil takeovers (Cooper and Richards, 1988; Ruback and Harris, 1984), valuation of takeovers (Ferguson and Popkin, 1982), and the capital budgeting consequences arising from oil and gas takeovers (Reid, 1973).

There is far less research on Canadian companies in the mergers and acquisitions literature; none consider the oil and gas industry. Canadian studies largely examine short term performance of domestic M&A (Smith et. al., 1997; Yuce and Ng, 2005; Ben-Amar and Andre, 2006), as well as long term performance (Andre et al., 2004). Performance is also studied in

foreign takeovers of Canadian targets (Eckbo and Thorburn, 2000), as well as in the Canadian banking sector (Baltazar and Santos, 2003; Chehab, 2002). More recently, Andre et. al. (2007) examines the issue of whether termination fees in mergers and acquisitions protect investors or managers. The US literature on M & A performance is vast spanning several decades of research. The many short term return performance studies generally document non-significant abnormal returns or significant negative returns for acquirers. They generally find takeover gains accrue to targets (Bruner, 2002; Martynova and Renneboog, 2008).

The merger and acquisition literature has established several key rational motivations which explain why managers engage in mergers and acquisitions. The first motivation is that managers desire to improve firm value by creating synergies and efficiencies from merging resources (Bruner, 2002). A second major motivation is that managers engage in takeovers because they benefit themselves as agents at the likely expense of decreasing shareholder value (Jensen and Meckling, 1976). An important recent development in theoretical motivations is that of stock market driven acquisitions (Shleifer and Vishny, 2003). Managers are motivated to acquire other companies because they can take advantage of high stock prices to buy other companies relatively cheaply. Empirical support for stock market driven acquisition theory is found in the studies of Dong et al. (2006) and Rhodes-Kropf et al. (2005).

METHODOLOGY

Energy Prices and Takeover Activity and Performance

Shleifer and Vishny (2003) explain that the occurrence of merger waves in the last several decades can be caused by stock market price valuations especially over valuation. Empirical support for stock market driven acquisition theory is found in the studies of Dong et al. (2006) and Rhodes-Kropf et al. (2005). Market timing is known to drive important corporate finance policy in practice as found in different studies. First, Baker and Wurgler (2002) finds that market timing in equity issuance at high stock prices and equity repurchase at low stock prices have persistant effects on capital structure. Second, studies (Loughran and Ritter, 1997; Rajan and Servaes, 1997; Teoh et al., 1998a; Denis and Sorin, 2001) on earnings forecasts and realizations of equity issues suggest that firms tend to issue equity at times when investors display too much enthusiasm over earnings prospects. Third, and more convincingly, Graham and Harvey (2001) find a majority of managers admit to market timing with equity issuance that "the amount by which our stock is undervalued or overvalued was an important or very important consideration."

In similar fashion, we contend that managers time corporate acquisitions with energy prices in the oil and gas industry. That is, takeover waves are driven by high energy prices. Given that high energy prices appear to directly increase energy firm stock prices, it would naturally follow that higher stock prices would motivate managers to make takeovers as theorized by Shleifer and Vishny (2003). Managers of energy firms like other firms, are motivated to take advantage of the over valuation of their firm to purchase relatively undervalued companies. Our observations of takeover activity (see figure 1 and 2) over time seem to attest to takeover waves in the energy sector; hence, we deduce that these takeover waves could be driven by high energy prices. Our theory of commodity price driven acquisitions, as captured in the

energy sector, is a new motivation for takeovers. It is a logical extension of Shleifer and Vishnys' stock market driven acquisition theory for takeovers. Hence, we propose this hypothesis:

> Hypothesis 1: Energy prices have a causal relation with the amount of takeover activity over time due to a commodity price driven acquisitions.

We use Granger causality test of our hypothesis that commodity prices are positively related to takeover activity. We use a time series of average annual spot price quotes for West Texas Intermediate crude oil from the U.S. Energy Information Administration with lagged values of the yearly number M & A deals. The Granger causality test can be used to determine whether a time series of data (crude oil prices) act as a leading indicator of a particular dependent variable (M&A activity). The duration of these time series is 19 years starting from 1990 to 2008. If energy prices are indeed related to oil and gas takeover activity, then it follows that energy prices should influence takeover performance. Hence, as a corollary to the hypothesis that energy prices influence takeovers, we further propose that energy prices influences takeover returns. We propose:

> Hypothesis 2: Energy prices have a causal relation with abnormal return performance to acquirers and targets over time due to a commodity price driven acquisitions.

We again employ Granger causality test to examine this relationship with these changes. We use the same time series of average annual spot prices for West Texas Intermediate crude oil. This time we test the dependant variable as the Cumulative Average Abnormal Returns for an event window averaged across firms in the same merger year. Hence, this time series is defined as the mean annual event window CAAR's. This time series is derived for both Canada and US firms, and for acquirers and targets.

M & A Announcement Performance

Consistent with most takeover studies, we examine the motivations for takeovers by examining the market return consequences of takeover announcements. Hence, we propose these hypotheses:

> Hypothesis 3: The takeover announcement return effects for acquirers are positive due to the value creation motivation in the energy sector.

> Hypothesis 4: The takeover announcement return effects for targets are positive in the energy sector.

We use event study to measure the abnormal returns around the announcements of the M&A transactions. Daily stock returns are used to estimate the abnormal returns associated with the merger announcement (Brown and Warner, 1985). *Eventus* software is used to perform the event study. For each security in our sample we measured returns using the market model. For each security *i*, we estimate the abnormal returns $AR_{i,t}$ as follows:

$$AR_{i,t} = R_{i,t} - \left(\widehat{\alpha}_i + \widehat{\beta}_i R_{m,t}\right) \quad (1)$$

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are OLS regression values from the estimation period prior to the event window, and t=0 is the first trading day after the announcement of the M&A transaction.

Market Timing and Determinants of Abnormal Returns in Oil and Gas Industry

Acquiring firm characteristics are examined to explain post merger performance to confirm and reveal more about explanations to oil and gas industry takeover performance. We specify the following OLS regression to examine determinants (and their definitions) of announcement returns:

$$CAAR(x,x) = \beta_0 + \beta_1 SIZE + \beta_2 NATION + \beta_3 MARKET\ TO\ BOOK + \beta_4 ROA + \beta_5 LEVERAGE + \beta_6 FIXED\ ASSETS + \beta_7\ FREE\ CASH\ FLOW + \beta_8\ DEAL\ VALUE + \beta_9\ OIL\ PRICE\ CHANGE + \beta_{10}\ GAS\ PRICE\ CHANGE + error$$

Above is estimated using OLS with White correction for heteroskedasticity where:

CAAR (x, x) = for event windows (-1,0), (0,+1) and (0, +3)
SIZE = Natural logarithm of total assets
NATION = Dummy of 1 representing Canada, O for United States
MARKET TO BOOK = Market to Book Value of Equity
ROA = Net Income / Total book value of Assets
LEVERAGE = Total Debt / Total Asset
FIXED ASSETS = Fixed Assets / Total Assets
FREE CASH FLOW = (EBITDA - Cash_Out_Investing_Activities) / Total_Sales
DEAL VALUE = Deal Value / Total Assets
DEAL TYPE = Merger or Tender offer, a dummy of 1 identifies tender offers
OIL PRICE CHANGE = change in yearly WTI crude oil prices, $P_t - P_{t-1}$, relative to merger year
GAS PRICE CHANGE = change in yearly natural gas prices, as above

Oil and Gas price changes are the variables of interest which are core to our theoretical proposition. That is, rising commodity prices, influence acquirer managers in making takeovers, and target managers to offer their firms for sale. We posit that managers time their takeovers when they notice significant increases in underlying oil and gas prices. We investigate three different timings of oil and gas price changes between: two years before and the year of the merger; two years before and one year before, and one year before and the year of merger. We expect that if managers are commodity price influenced to make takeovers, then this should influence takeover market performance.

The first explanatory variable is size of the acquirer which is used as a control variable for differences of returns attributed to size differences. While larger firms can improve performance through creating economies of scale, the opposite can also be true; that is larger firms can destroy value through creating diseconomies of scale with increased agency, bureaucratic, and inefficiency costs as suggested by Mueller (1972). Hence, the hypothesized relationship is viewed as an empirical issue here.

The second variable is "Nation" which represents whether if the acquirer is listed in Canada or the United States. The next control variable is market valuation which is to be positively related to performance change because favorable market valuations of an acquirer should signal favorable future post merger performance. It is measured as the market to book value of equity one year before M & A. Profitability, as measured by ROA, can tell us whether if profitable firms perform better or not with M & A. Leverage, measured as the pre M & A debt to asset ratio, also serves as a control. The M & A literature generally shows that leverage is often not a significant variable related to performance. The fixed assets variable is not typically examined in the M & A literature. It is examined here to evaluate whether if fixed assets in such a heavily asset intensive industry would matter to takeover performance. It is scaled by the total asset value of the acquirer.

Agency problems are also manifest in free cash flow theory (Jensen, 1986) which predicts that managers of firms with high free cash flow are likely to make value destroying mergers. Jensen's (1986) theory on high free cash flow firms has found empirical support (Lang et al., 1991; Harford, 1999; Freund et al., 2003). Hence, cash flow is expected to have a negative relationship with M & A performance change. It is measured as EBITDA minus Cash Out from Investing Activities, which nets out cash that is needed for investments. Deal value is also examined to ascertain the impact of the transaction on return performance as it serves as a proxy for takeover premiums. In the absence of value creating synergies gained from M & A, we expect that deal value would negatively impact acquirer returns.

We include deal type to test for the effect of tender offers (vs. merger) which is generally found to be positively related to takeover performance. Lastly, we also examine for type of payment, the effect of stock payment (identified as a dummy variable) which is often found to be negatively related to takeover performance in the literature.

SAMPLE DESCRIPTION

The population set of mergers and acquisitions over a two-decade period is taken from the *Thomson One Banker* database. We began collecting all M & A deals that occurred in Canada and the United States between January 1, 1990 and April 30, 2008. To get M & A deals in the energy sector, we include only the transactions whose acquirer or target have a primary Standard Industrial Classification (SIC) codes corresponding to the energy sector. Our sample included M & A firms with the following SIC codes:

- 1311: Crude Petroleum & Natural Gas
- 1381: Drilling Oil & Gas Wells
- 1382: Oil & Gas Field Exploration Services
- 1389: Oil & Gas Field Services, NEC
- 2911: Petroleum Refining
- 2990: Miscellaneous Products of Petroleum & Coal
- 4610: Pipe Lines (No Natural Gas)
- 4922: Natural Gas Transmission
- 4923: Natural Gas Transmission & Distribution
- 4924: Natural Gas Distribution

We eliminate deals which are not completed, as well as share repurchases, self-tender offers, and non-controlling stake purchases. We also eliminate deals in which there is insufficient deal information on the database, often these are private oil and gas firms, which have no deal value. All firms have their primary listing on a major Canadian, such as the Toronto Stock Exchange or American stock exchange, such as the New York Stock Exchange. Table 5 and 6 presents frequency statistics of the population of merger and acquisition deals in Canada and the United States. Observations about these tables will be presented in the results section on the state of takeovers in North America.

Announcement Return Performance

Much of the takeover activity consists of transactions involving private companies and public subsidiary companies. Of 6,745 takeovers, 3,285 involved a subsidiary target and 2,399 involved a private target. A small number of transactions involve an asset or company with joint venture, government, or unknown corporate status. Only 940 of the targets in our sample are independent publicly listed companies. Of this subsample, 718 transactions involved a public company acquiring another public company; this sample of public-public transactions is the focus of our event study. In examining stock return performance surrounding M & A announcement, stock return data is obtained from *Datastream.* The resulting sample represents publicly traded Canadian M & A deals and publicly traded United States M & A deals. The initial sample encompassed 718 M&A transactions, each of which have Canadian or American target along with an acquirer based in Canada, United States, or foreign country outside of Canada and the US. We further eliminate acquirer or target firms in which either no stock return data is available, or stock returns are discontinuous (have large gaps), and whose share price is below five dollars. The final sample for stock return performance consists of 323 Canadian and 188 American firms. For the acquirers, data is available for 284 Canadian and 183 American firms. As a benchmark index necessary in the event study, the TSX Composite Index is used for Canadian oil and gas firms; the Russell 1000 Index is used for American firms for the same time period from 1990 to 2008. Both of the indices, TSX Composite Index and Russell 1000 are value-weighted indices.

RESULTS

1. The State of Takeovers in the Energy Sector

The last 18 years visibly demonstrates merger waves in the energy sector. Figure 1 shows the number of M&A transactions in Canada and the United States over time from 1990 to 2008. Canadian M&A activity is steadily increasing since 1990.

We note the clear pattern of at least two merger waves in both countries during the late 1990's and in the years leading up to 2007. The merger waves in Canada seem to move in sync with the US waves. In the United States, an interim peak in the number of deals, over 300, is reached in 1997, and only in 2006-2007 are those numbers of transactions being achieved again. The low points or the troughs of the merger waves, in terms of activity, appear in 2001 to 2002 which coincides with a recession more acutely felt in the United States

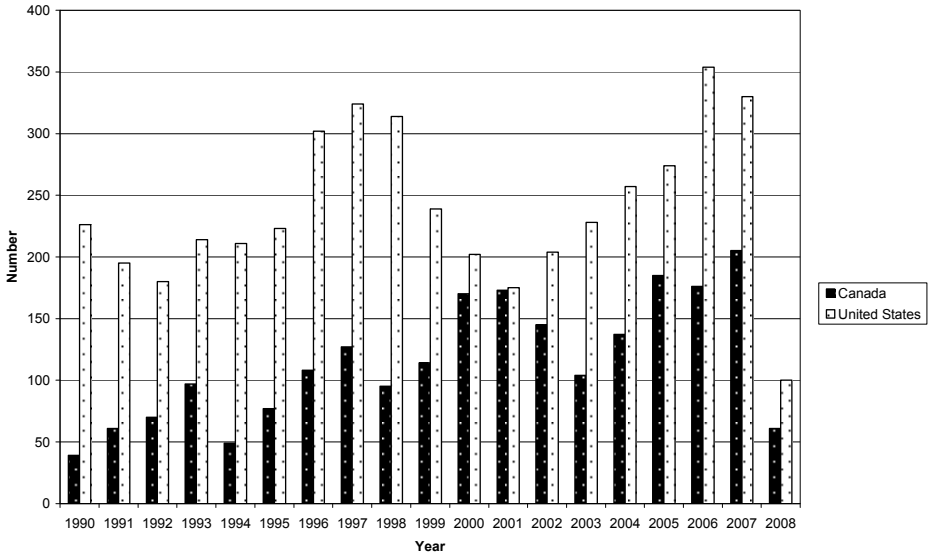


Figure 1. Number of Mergers and Acquisitions by Year.

Note: 2008 totals are up to April 30.

Such merger waves illustrated by deal activity are also reflected in deal values to merge and to acquire firms. Figure 2 illustrates the deal values in both Canada and the US over the same time period. We observe that average deal values appear to show a clear pattern of increases that coincide with the two merger waves in both countries during the late 1990's and in the years leading up to 2007. We observe exceptionally large jumps in average deal values in the United States to over 300 million dollars in the years 1998 to 2001. This large jump is not observed in Canada. The United States average deal value also shows a curious spike in deal value in certain years, particularly from 1999 to 2001. This can be partially explained by consolidation of the merger of two of the world's largest oil companies, the November 30, 1999 merger of Exxon and Mobil Corp. The low points or the troughs of the merger waves, in average deal value, appear in 2002 to 2003 which coincides with a recession. In the most recent merger wave of the last five years, since 2004, seems to coincide with rising energy commodity prices.

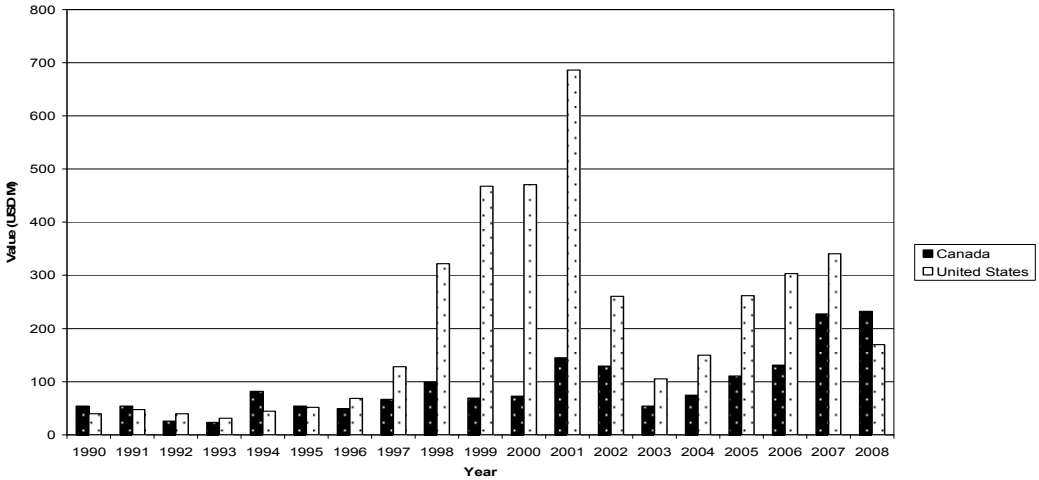


Figure 2. Average Deal Value by Year.

Table 1. Completed Mergers and Acquisitions by Year by Canada, US and Foreign Acquirers

Year	# of Deals	Total Deal Value (USD M)	Target Country				Acquirer Country			
			Canada		U.S.					
			Number	Total Value (USD M)	Number	Total Value (USD M)	Canada	U.S.	Foreign	Undisclosed
1990	265	11,124	39	2,122	226	9,002	37	199	20	9
1991	256	12,602	61	3,282	195	9,320	48	187	9	12
1992	250	8,971	70	1,793	180	7,178	66	166	5	13
1993	311	8,976	97	2,276	214	6,700	94	200	10	7
1994	260	13,401	49	4,003	211	9,398	45	197	8	10
1995	300	15,793	77	4,199	223	11,594	70	209	11	10
1996	410	26,055	108	5,343	302	20,711	94	291	9	16
1997	451	50,007	127	8,528	324	41,480	123	295	14	19
1998	409	110,511	95	9,450	314	101,061	84	296	15	14
1999	353	119,715	114	7,890	239	111,825	104	233	12	4
2000	372	107,415	170	12,382	202	95,034	143	194	21	14
2001	348	145,208	173	25,127	175	120,081	144	179	16	9
2002	349	71,999	145	18,794	204	53,205	134	178	14	23
2003	332	29,718	104	5,669	228	24,049	110	206	5	11
2004	394	48,779	137	10,237	257	38,542	130	237	13	14
2005	459	92,253	185	20,469	274	71,784	180	243	22	14
2006	530	130,467	176	23,075	354	107,392	170	310	36	14
2007	535	158,934	205	46,597	330	112,338	180	278	38	39
2008	483	93516	183	42498	300	51,015	50	87	10	14
Total	6745	1,193,101	2193	225,404	4552	967,697	2006	4185	288	266
Median	349	48,779	108	8528	226	38542	104	206	13	14
Mean	355	62,795	115	11863	240	50931	106	220	15	14

Note: 2008 totals are up to April 30

2008 deals are as of April 30th. Original figures are 161 total, 61 Canadian, and 100 US deals
Total deal values are as of April 30th. Original figures are 14,166 in Canada, and 17005 in US.
We have annualized number of deals and total deal value to full year by multiplying by 300%.

In the last 18 years, there is active domestic, cross-border Canada and US, and foreign M & A deals made. Table 1 provides a breakdown of the number of deals, total deal value, and the nationality of the acquirer by year since 1990. In the 1990 to 2008 period (up to April 30), there are 6,745 completed takeovers in the North American (Canada and United States) energy sector with a total collective deal value of approximately $1.2 trillion. The location of incorporation of targets and acquirers is used as the criterion for classification by country. There are 4,552 American companies and 2,193 Canadian companies acquired during this period. The total value of the deals however is higher in the United States, with $967,697 billion over the 18-year period compared with $225,404 billion in Canada (an approximate 4-to-1 ratio). This ratio is also shown in median deal values; for Canada, it is 8,524 million USD; for US, it is 38,542 million USD. Means are slightly larger than median figures implying a slight skewness in distribution towards larger deals. Foreign deals account for only 288 M & A deals compared to the population of 6745 deals which represents only 4.3% of all deals. There are increases in recent years in foreign takeover deals (36 in 2007, 38 in 2008) which seem to warrant the increase in public perception that foreign companies are interested in taking over domestic oil and gas companies. Yet, they still represent a clear minority of M & A deals. There are 266 deals of which there is no disclosure of the geographic origin of the acquirer.

In Canada, while domestic deals dominate, there appears to be a wave of cross border and foreign takeovers in recent years. Table 2 presents yearly takeover activity which sources the nationality of the acquirer in Canada and the US.

Table 2. Mergers and Acquisitions by Country of Acquiring and Target Firm.

Year	# of Deals	Number of Canadian Targets Acquired by:				Number of U.S. Targets Acquired by:			
		Canada	U.S.	Foreign	Undisclosed	Canada	U.S.	Foreign	Undisclosed
1990	265	24	3	12	0	4	196	17	9
1991	256	47	9	4	1	1	178	5	11
1992	250	62	2	1	5	4	164	4	8
1993	311	88	3	4	2	6	197	6	5
1994	260	36	7	2	4	9	190	6	6
1995	300	64	8	3	2	6	201	8	8
1996	410	86	12	2	8	8	279	7	8
1997	451	112	6	3	6	11	289	11	13
1998	409	70	19	2	4	14	277	13	10
1999	353	100	11	2	1	4	222	10	3
2000	372	132	20	7	11	11	174	14	3
2001	348	133	26	5	9	11	153	11	0
2002	349	119	9	6	11	15	169	8	12
2003	332	98	2	1	3	12	204	4	8
2004	394	118	10	3	6	12	227	8	10
2005	459	162	11	1	11	18	232	21	3
2006	530	150	5	14	7	20	305	22	7
2007	535	160	12	13	20	20	266	25	19
2008	161	48	4	3	6	2	83	7	8
Total	6745	1809	179	88	117	188	4006	207	151

Note: 2008 totals are up to April 30.

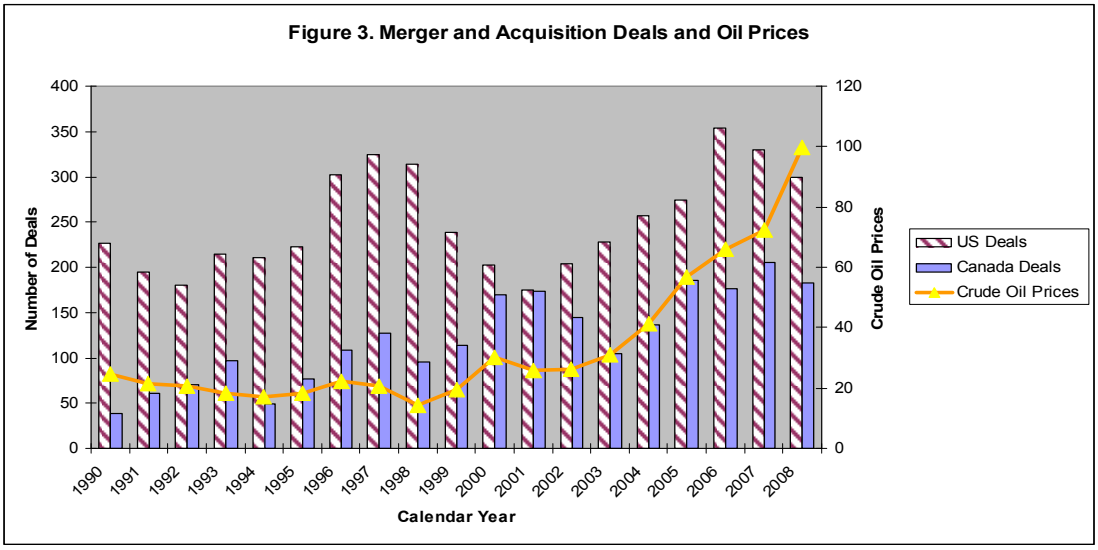
The majority of the Canadian energy companies acquired over the past 18 years are taken over by other Canadian companies. Of the 2,193 Canadian companies taken over in our sample, 1,809 or 82.5%, are acquired by another Canadian firm. American-based acquirers accounted for 179 Canadian takeovers (8.2%) and other foreign companies accounted for 88 takeovers (4.0%). This appears to differ from the public and media concern that American and other foreign companies account for the majority of Canadian energy company takeovers; most of the activity is domestic industry consolidation within Canada. There are 117 Canadian targets with an undisclosed acquirer.

The United States situation is similar to Canada. While domestic deals dominate, there appears to be a wave of cross border and foreign takeovers in recent years. Table 2 also shows that out of 4,552 deals, 4,006 (88.0%) involved an American-based acquirer. Canadian acquirers made 188 deals (4.1%) with US targets while foreign acquirers account for 207 deals (4.5%). There are 151 transactions with an undisclosed acquirer. Of interest is the reciprocal number of Canada-US and US-Canada cross-border takeover deals suggesting equal opportunity and motivation for these deals from these neighboring countries. In the last eighteen years, 179 Canadian targets are bought by US firms while 188 US targets are bought by Canadian firms.

2. High Energy Prices and Takeover Waves

Hypothesis 1: Energy prices have a causal relation with the amount of takeover activity over time due to a commodity price driven motivation.

Figure 3 illustrates the history of annual takeover activity (in Canada and the US) during this sample period with an overlay of historical crude oil spot prices. We can see a pronounced takeover wave in both countries beginning that moves closely with the rise in crude oil prices in 2002 to 2008. While there is an earlier takeover wave between 1995 and 1998, there does not appear to be a corresponding rise in oil prices. Hence, the price and takeover wave relationship is uneven over time.



We present Table 3 results in examining the hypothesized theoretical relationship between high energy prices and amount of takeovers in the oil and gas industry. In the Granger causality test, we use a time series of average yearly spot price quotes for West Texas Intermediate crude oil from the U.S. Energy Information Administration against lagged values of the yearly number of mergers and acquisitions.

Energy prices appear to motivate takeover waves. Granger Causality results show strong significant F-statistics scores of 4.002 and 10.228 for both K1 and K2 tests. These results mean that there is a bi-causal or feedback relationship between energy (crude oil spot) prices and North American M&A activity. That is, high energy prices appear to drive takeover waves, and takeover waves appear to drive higher energy prices. We did further subsample analyses by examining energy prices and takeover activity by country. We find that the F-statistics are not significant with Canadian oil and gas takeover activity. Hence, this suggests that high energy prices do not motivate Canadian managers to time the market and acquire oil and gas companies. The opposite is true with the US sample; the F-statistics are significant. High energy prices appear to motivate managers to acquire oil and gas companies.

Table 3. Causality Analysis of Crude Oil Prices and Takeover Activity

This table presents results of an analysis of causality direction by Granger Causality test. Annual number of takeover deals is tested against average annual spot prices for West Texas Intermediate Crude Oil. Takeover deals and WTI Crude variables are made stationary using first order changes, and takeover activity is lagged by one and two years. Test F-statistics and p-values are reported, and significance levels are indicated by: * at the 10% level ** at the 5% level *** at the 1% level.

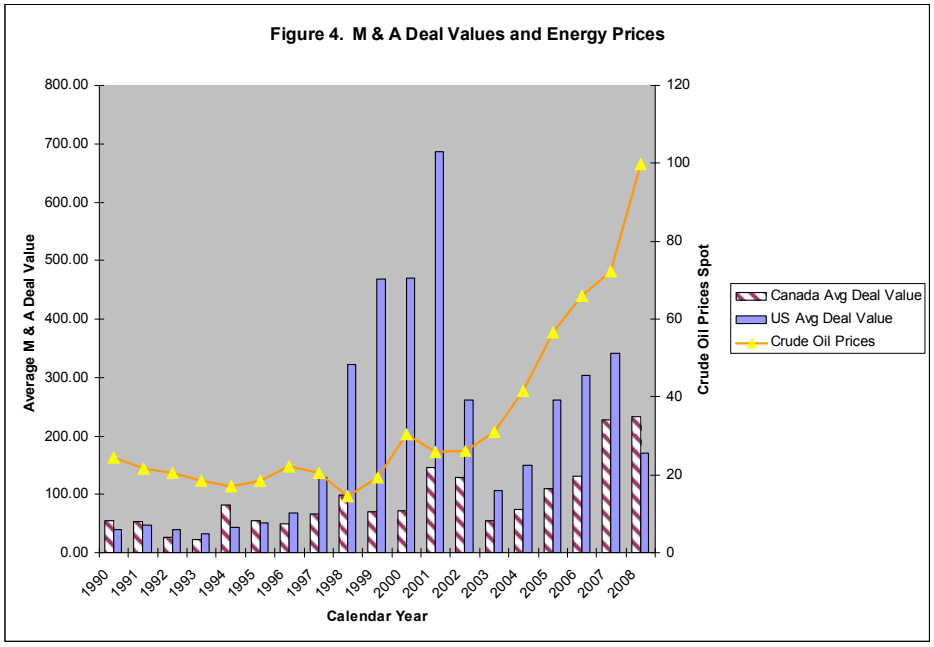
	North America & WTI Crude	**Canada & WTI Crude**	**U.S. & WTI Crude**
Test 1	4.002***	1.708	2.852*
p value 1	.036	.209	.084
Test 2	10.228***	4.365	7.289**
p value 2	.006	.113	.026
Result	Feedback Relationship	No Relationship	Feedback Relationship

Hence, the results to our hypothesis are promising in proposing a new motivation for mergers and acquisitions. As captured by the specific industry sample of oil and gas companies, we show first evidence that commodity prices can motivate managers to time energy commodity prices for takeovers. Indeed, the takeover waves we see in the oil and gas industry are caused by high energy prices.

3. High Energy Prices and Takeover Performance

Hypothesis 2: Energy prices have a causal relation with abnormal return performance to acquirers and targets over time due to commodity price driven acquisition

Figure 4 illustrates the history of average takeover deal values (in Canada and the US) during this sample period with an overlay of historical crude oil spot prices. Examining this figure gives intuition to our hypothesis of the relationship between energy prices and deal size, and suggestions about takeover performance. We can clearly see two waves of deal values, 1998 to 2001 and 2003 to 2008, in both countries. Average deal values move closely with the rise and fall in crude oil prices during these takeover waves. The price and deal value relationship is uneven over time.



We find clear support for this relationship between energy prices and acquirer performance during takeover announcements although there are country differences. Table 3 presents results of the Granger causality test between energy prices and annual CAAR return performance with the interpretation of the results indicated in the last rows. In Panel A, Granger analysis is applied to the Canadian and U.S. acquirer (-1,+1) and (-10,+10) windows with lag periods of one and two years with average yearly WTI Crude spot prices used as the dependent variable. Canadian acquirers show no causality relationship for both event windows as the p-values of both tests are not significant. In contrast, U.S. acquirers show a feedback or bi-causal relationship. The p-values show significance at the 10% level for both windows with a lag of one year, and significance at the 5% level for both windows with a lag of two years. Hence, in the U.S. the average abnormal return for acquiring firms is influenced by crude oil prices.

Of interest, we see country differences in the results of this relationship. This result of no relationship between energy prices and acquirer takeover performance is as expected and consistent with the earlier finding that Canadian acquirers do not appear to time the market for

energy prices in making acquisitions. The other main result of a significant relationship between energy prices and takeover performance is also as expected and consistent with the earlier finding that American oil and gas acquirers are timing the market in making acquisitions.

Table 4. Causality Test of Energy Prices and M & A Performance

This table presents results of an analysis of causality direction by Granger Causality test. Two annualized CAAR windows [(-1,+1) and (-10,+10)] for targets and acquirers are tested against average annual spot prices for West Texas Intermediate Crude Oil. CAAR windows and WTI Crude variables are made stationary using first order changes, and performance is lagged by one and two years. Test F-statistics and p-values are reported, and significance levels are indicated by: * at the 10% level ** at the 5% level *** at the 1% level.

Panel A: Energy Prices and Canadian and U.S. Acquirer M & A Performance

	Canada (-1,+1) & WTI Crude		**Canada (-10,+10) & WTI Crude**		**U.S. (-1,+1) & WTI Crude**		**U.S. (-10,+10) & WTI Crude**	
Test 1	1.346		1.701		2.906	*	2.703	*
p value 1	0.285		0.211		0.081		0.094	
Test 2	3.439		4.347		7.426	**	6.907	**
p value 2	0.179		0.114		0.024		0.032	
Result	No Relationship		No Relationship		Feedback Relationship		Feedback Relationship	

Panel B: Energy Prices and Canadian and U.S. Target M & A Performance

	Canada (-1,+1) & WTI Crude		**Canada (-10,+10) & WTI Crude**		**U.S. (-1,+1) & WTI Crude**		**U.S. (-10,+10) & WTI Crude**	
Test 1	3.680	**	4.103	**	3.676	**	6.389	***
p value 1	0.046		0.034		0.046		0.008	
Test 2	9.405	***	10.487	***	9.394	***	16.327	***
p value 2	0.009		0.005		0.009		0.0002	
Result	Feedback Relationship		Feedback Relationship		Feedback Relationship		Feedback Relationship	

We find strong support for this relationship between energy prices and target performance during takeover announcements in Canada and the US. The nature of this relationship is that it is a feedback or bi-causal relationship. Panel B indicates there is significance at the 5% level for a lag of one year in both Canadian target event windows. There is significance at the 1% level for the U.S. (-1, +1) window. There is also significance across all windows for a two year lag at the 1% level. These results strongly indicate that average annual

crude oil prices act as a predictor of the premium (average abnormal return) paid on the acquisition of Canadian and American targets. These feedback relationship findings further imply that such premiums appear to affect energy prices. Since the p-values are lower than in Panel A, the effect is more pronounced for Canadian and American targets than for acquirers in both countries.

We further discuss this key conclusion of the feedback relationship encountered between energy prices and takeover waves and takeover performance. This industry restructuring by M & A (and related performance), in response to high energy oil prices, could be explained. High energy prices as a fundamental economic factor has influenced the directions of national and regional economies. As it powerfully signals to the energy sector about the price of energy, it also communicates the supply and demand conditions of oil and gas commodities. During extended high energy price cycles of several years, these high prices signal supply shortages and excess demand. From an energy producer's point of view, high energy prices signal energy producing assets are scarce and insufficient to meet worldwide demand. Hence, the managers in the oil and gas industry respond to a perceived shortage of energy producing assets by acquiring other energy firms, a form of hoarding that is plausible in an industry that is often worried about finite oil resources. They are also timing the market in taking advantage of high stock prices imputed into their company by high energy prices to acquire more assets. A third reason is high energy prices greatly enhance cash flow to these firms making them free cash flow rich firms. Such firms, as Jensen (1986) theorizes and Lang et al. (1991), Harford (1999) and Freund et al. (2003) empirically support make these firms into acquirers who will waste their excess cash on value destroying acquisitions. Taking these conditions together, high energy prices, perceived shortage of energy assets, energy and stock price market timing and excess free cash flow, create potent impetus for takeover waves to happen. Therefore, the oil and gas industry consolidates as a result of responding to high energy prices with acquisitions. Moreover, these conditions explain why acquirers are likely to make acquisitions with hubris (Roll, 1986) by overpaying for oil and gas targets. Our next finding of negative abnormal returns for both Canadian and US acquirers lends support to this explanation. Note this motivation contrasts with traditional managerial motivation for M & A of value creating synergies or value destroying agents.

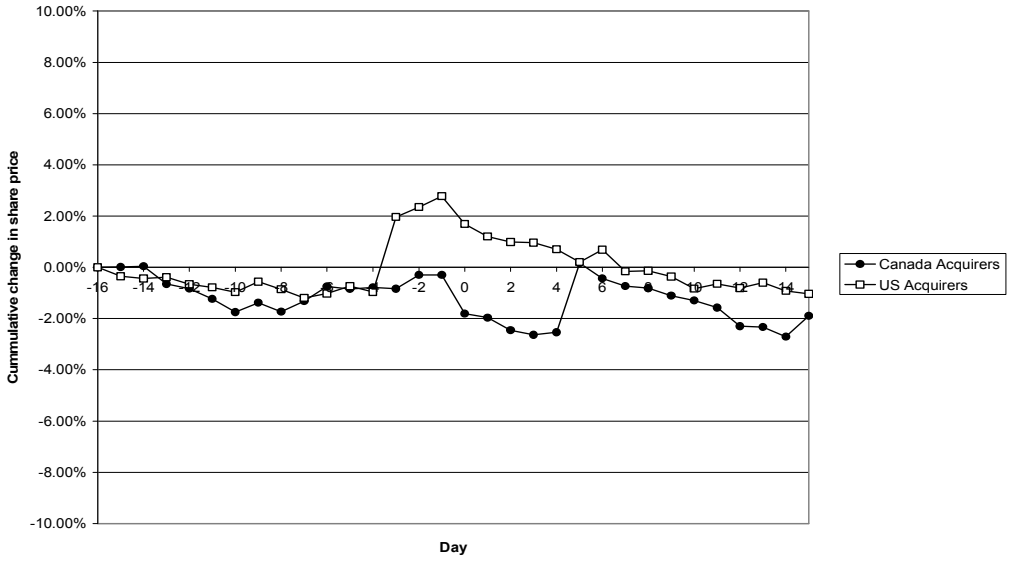
While high energy prices spur demand for oil and gas producing assets, the supply of these assets is enhanced to feed the takeover wave. Smaller, fast growing, or high potential junior oil and gas companies are typically bought out by more established players as is often mirrored with M & A in the general economy. Managers of such targets are motivated to time the market of high energy prices to allow their company to be taken over for the maximum takeover premium. This is good for their shareholders; it also is a golden opportunity for these firms to recoup from the heavy investments, negative profits and cash drains incurred in the high risk, oil exploration and development costs germane to them as younger companies. It is also the only strategic choice available to expand in a competitive market for takeovers as they are the least competitive to acquire others. Hence, high energy prices spur an increase in potential takeover targets to meet high demand for energy assets for higher takeover premiums. Thus, a takeover wave in the energy sector begins and sustains itself spurred by high energy prices. Our next finding of high positive abnormal returns for both Canadian and US targets lends support to this explanation.

The feedback response of high energy prices caused by M & A restructuring and performance can be explained. During high energy prices, the resulting consolidation by takeovers of the oil and gas firms in the industry reduces the market of energy producing assets. With a shortage of such firms, a perception of fewer firms can create a perception of lower oil and gas commodity supply. This reduction in firm level supply logically raises energy prices especially in a high energy price context where there is strong demand. High takeover premiums for targets feedback to high energy prices because they signal higher cost of future supplies of energy commodities.

4. Short term Performance of Energy M & A

We find similarities and differences in announcement return patterns between Canada, US, and foreign mergers and acquisitions. Moreover, return patterns from the oil and gas industry actually differ from the documented return patterns in the Canada and US M & A literature. Figure 5 displays a graph of these CAAR values in the days surrounding announcement, and it clearly shows a modest negative drift in the abnormal returns for the acquirer immediately following the announcement of the M&A transaction. While there appears to be abnormal return gains shown by the US acquirer line, these returns are not significant.

Figure 5. Cumulative Abnormal Return Change in Share Price for Acquirer Companies During Event Window (-15 to +15 days)



Announcement of M & A lead to significant decreases in shareholder value for acquirers. Table 5 presents results of our event study performed on all M&A transactions involving public acquirers and targets. Panel A displays the cumulative average abnormal returns (CAAR) values for acquirers from Canada and the U.S. In the (0,+1) event window, the CAAR for Canadian acquirers is -1.68%, and for U.S. based acquirers is -1.54%. These returns are significant and material for both countries at less than the one percent level. In the (0,+3) event window, the CAAR for Canadian acquirers is -2.37%, and for U.S. based acquirers is -1.77%. These returns are significant and material for both countries at less than the one percent level. In the (-10,+10)

event window, there is no significant abnormal return for the Canadian and American samples. In comparison, the negative abnormal returns suffered by both Canada and US are comparable in magnitude.

Table 5. Cumulative Average Abnormal Returns for Acquirers and Targets.

Panel A: Cumulative Average Abnormal Returns for All Acquirers

	CANADIAN ACQUIRERS				**U.S. ACQUIRERS**			
Event Windows	Mean (%)	% +	% -	t-statistic	Mean (%)	% +	% -	t-statistic
(-1,+1)	-1.67***	41	59	-3.00	-1.12*	44	56	-1.642
(-1,0)	-1.51***	41	59	-3.04	-0.64	47	53	-1.074
(0,+1)	-1.68***	36	64	-3.38	-1.54***	40	60	-3.132
(0,+3)	-2.37***	40	60	-2.94	-1.77***	42	58	-2.489
(0,+5)	0.50	42	58	0.16	-2.52***	39	61	-3.083
(-10,+10)	0.00	50	50	0.00	0.03	42	58	0.010
Number of Observations	*n=284*				*n=183*			

*. **, *** indicate estimates are statistically different from zero at the 0.10, 0.05 and 0.01 level of significance respectively.
+ and – indicate the percentage of firms in the sample who saw a share price increase/decrease in a particular event window.

Panel B: Cumulative Average Abnormal Return for All Canadian Targets

	CANADIAN TARGETS							
	Acquirer is Domestic				**Acquirer is Foreign**			
Event Windows	Mean (%)	% +	% -	t-statistic	Mean (%)	% +	% -	t-statistic
(-1,+1)	9.64***	74	26	9.33	17.64***	80	20	6.22
(-1,0)	8.18***	70	30	8.89	13.75***	75	25	4.75
(0,+1)	8.18***	71	29	8.61	16.82***	80	20	6.24
(0,+3)	7.47***	68	32	7.27	16.45***	78	22	5.44
(0,+5)	7.45***	68	32	6.44	17.93***	83	17	6.77
(-10,+10)	11.16***	70	30	6.40	22.53***	90	10	4.31
Number of Observations	*n=242*				*n=40*			

*. **, *** indicate estimates are statistically different from zero at the 0.10, 0.05 and 0.01 level of significance respectively.
+ and – indicate the number of firms in the sample who saw a share price increase/decrease in a particular event window.

In comparison to the empirical literature on takeover performance, these results stand out. The Canadian studies that examine general industry M & A performance (Smith et. al., 1997; Yuce and Ng, 2005; Ben-Amar and Andre, 2006) generally find there are significant positive gains to acquirers during takeover announcements. Hence, they generally conclude that takeovers motivations in Canada are value creating. This is not found to be the case with our study of Canadian oil and gas sector companies; hence, we observe particular industry differences with the energy sector that warrant examination of alternative motivations for

takeover. For the US, our finding of negative announcement returns appears consistent with stylized facts of the literature which have generally documented 0 or negative acquirer returns.

Panel C: Cumulative Average Abnormal Return for All U.S. Targets

	U.S. TARGET							
	Acquirer is Domestic				**Acquirer is Foreign**			
Event Window	Mean (%)	% +	% -	t-statistic	Mean (%)	% +	%-	t-statistic
(-1,+1)	17.53***	81	19	6.432	8.45***	82	18	3.715
(-1,0)	13.38***	77	23	5.436	8.55***	88	12	3.821
(0,+1)	15.02***	79	21	6.194	8.21***	88	12	3.030
(0,+3)	15.23***	76	24	5.523	11.64***	76	24	2.624
(0,+5)	14.76***	75	25	5.420	11.54***	77	23	2.607
(-10,+10)	22.36***	75	25	4.960	16.15***	82	18	3.769
Number of Observations	*n=150*				*n=17*			

*. **, *** indicate estimates are statistically different from zero at the 0.10, 0.05 and 0.01 level of significance respectively.
+ and – indicate the number of firms in the sample who saw a share price increase/decrease in a particular event window.

Target firms in Canada and in US continue to post gains from M & A, although the magnitudes of returns are notably different. As shown in Figure 6, for both Canadian and American targets, regardless of the nationality of the acquirer, there is an upward spike in share price upon announcement. It appears clearly that US targets gain much higher returns, around 10% more than Canadian targets.

Figure 6. Cumulative Abnormal Return Change for Target Companies
During Event Window (-15 to +15 days)

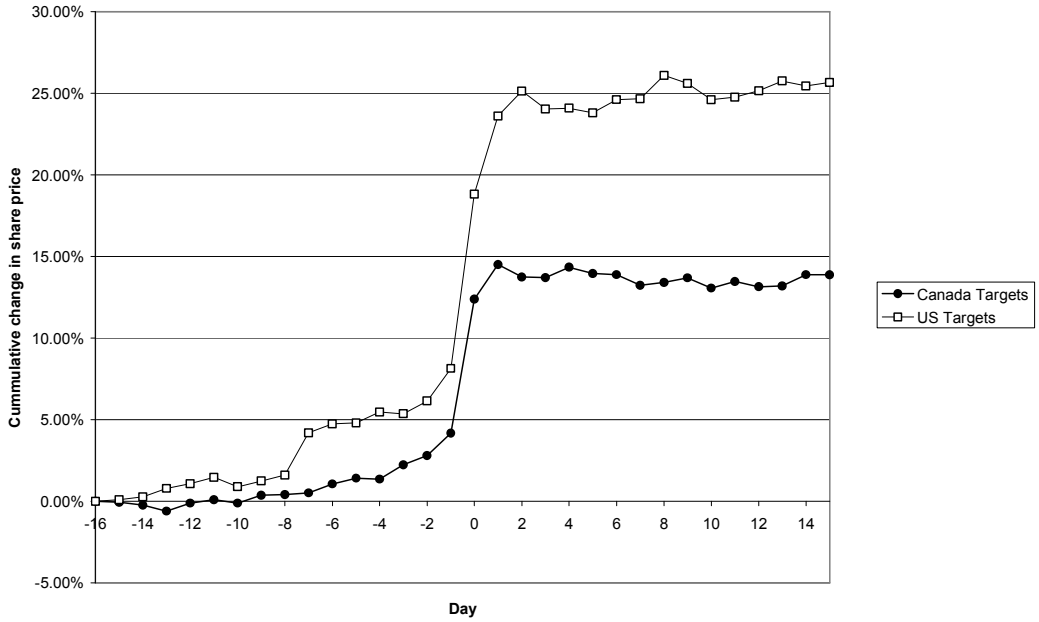


Figure 4. Cumulative Abnormal Change in Share Price for Target Companies in the -15,+15 Event Window (Day -16 = 0% change).

For both the Canadian and American target samples, there is a certain amount of upward abnormal share price movement in the days immediately prior to the release of the profit warning. It is for this reason that the (-10,+10) event window has the highest abnormal return of all the other post-event windows in Table 5, both Panels B and C. This abnormal increase prior to the official release of the acquisition can be associated with the early "leakage" of information not dissimilar to previous studies.

Much as we hypothesize, there is a large abnormal return in Canadian oil and gas targets surrounding the announcement date. Panel B of Table 5 present announcement returns for Canadian targets taken over by domestic acquirers compared with foreign acquirers. All of the event windows show significant positive CAAR values at the one percent level. Of note, when the acquirer is a domestic Canadian firm, the cumulative abnormal returns range from 7.45 to 11.16 percent, significant at less than one percent level. However, when the acquirer is a foreign firm, the comparable returns range from 13.75 to 22.53 percent significant at less than one percent level. Clearly, it appears that foreign acquirers pay about twice the premium than domestic acquirers do for takeovers. Is this significantly different? Table 6 results show that foreign acquirers pay a significantly higher premium of 5 to 11 percent than Canadian acquirers to buy a Canadian company (significant at less than one percent level). Over the (-10,+10) event window, that CAAR premium is 11.371%, which can translate to hundreds of millions of additional dollars in premium paid on large M&A transactions. As also shown in Panel B, there are more Canadian targets experiencing announcement return gains at an average proportion of 70% gainers versus 30% losers. For every two targets that gain on announcement, there is about one target that loses. If the acquirer is foreign, then Canadian target chances of gaining are much higher; gainers outnumber losers four to one.

Table 6: Difference in CAAR (Domestic vs. Foreign) for all Canadian Targets

	EVENT WINDOWS					
	(-1,+1)	**(-1,0)**	**(0,+1)**	**(0,+3)**	**(0,+5)**	**(-10,+10)**
Mean Difference (%)	-7.999***	-5.573**	-8.642***	-8.982***	-10.482***	-11.371***
t-statistic	-2.649	-1.836	-3.021	-2.810	-3.626	-2.062

*. **, *** indicate estimates are statistically different from zero at the 0.10, 0.05 and 0.01 level of significance respectively.

Much as we hypothesize, there is a large abnormal return in U.S. oil and gas targets surrounding the announcement date. Panel C of Table 5 presents CAARs for American targets taken over by domestic acquirers compared with foreign acquirers. All of the event windows show significant positive CAAR values at the one percent level. For U.S. targets acquired by domestic firms, the CAAR for the (0,+1) window is 15.02%, while the CAAR is 8.21% for this same event window with foreign acquirers. Of note, when the acquirer is a domestic American firm, the cumulative abnormal returns range from 13.38 to 22.36 percent. However, when the acquirer is a foreign firm, the comparable returns range from 8.21 to 16.15 percent. Clearly, it appears that foreign acquirers pay a substantially smaller premium than domestic acquirers do for takeovers by about five percent. Is this significantly different? As this foreign-American target sample is too small (n=17), this examination is not considered further. As also shown in Panel C, there are more American targets experiencing announcement return gains at an average

proportion of 77% gainers versus 23% losers. For almost every three targets that gain on announcement, there is about one target that loses. If the acquirer is foreign, then a US target chances of gaining are much higher; gainers outnumber losers four to one similar to Canada.

In the oil and gas industry, there are notable differences in takeover return patterns between Canada and US targets and between foreign and domestic acquirers. First, we note US targets gain substantially more premium about 10% compared with Canadian targets. Moreover, US targets are more likely to gain from acquisition than Canadian targets do. In Canada, foreign acquirers pay about twice the premium compared to domestic acquirers in takeovers. Whereas, in the US, foreign acquirers pay about half the premium compared to domestic acquirers. Both Canadian and US targets are much more likely to gain when the acquirer is foreign.

5. Determinants of Abnormal Returns in Oil and Gas Industry

In identifying explanations to takeover return performance, there are determinants particular to the oil and gas industry not found in the general M & A literature. Table 7 presents the results of determinants of CAAR returns for the combined Canadian and US acquirers; each of the model regressions are significant with adjusted R-squares from 8.9 to 18.9 percent.

Oil and Gas price changes are the variables of interest which are core to our theoretical proposition. That is, rising commodity prices, influence managers in making takeovers. We posit that managers time their takeovers when they notice significant increases in underlying oil and gas prices. We find results supporting our proposition in oil and gas price changes between two years before and the year of the merger. Indeed, we find that oil price changes are significant and negatively related to acquirer performance at the one percent level or less. This negative relation implies that larger changes in gas prices are related to lower acquirer takeover returns. This is plausible as we consider that larger oil price increases (as occuring in the last 18 years) could lead some managers to overvalue their own firm, their target and the benefits of the takeover. This is consistent with the theoretical consequence of stock market price driven acquisitions (Shleifer and Vishny, 2003). Consequently, at the precise event day of takeover, the overvaluation of the takeover or managerial hubris (Roll, 1968) are revealed by a realistic and efficient market. Gas price changes are significant and positively related to acquirer performance at the one percent level across all four regression results. To explain why gas price changes have the opposite and significant sign versus oil prices on takeover performance, we find that changes in gas prices have a strong negative correlation (-0.75) with changes in oil prices. This is plausible as larger gas price increases could lead managers in the natural gas industry to time their takeovers ,without overvaluation issues, to benefit performance.

The size of the acquirer is significant (at less than five percent level) and negatively related (-2.03) to announcement performance. The "Nation" coefficient of 2.03 is significant at the five percent or less level. This implies that there are country differences between Canada and the United States in explaining returns. The market to book value is significant (at five percent or less level) and negatively related (-2.25 and -2.16) to acquirer returns in two windows. This result suggests that high or overvalued acquirers tend to under perform in M & A. This is consistent with a strand of M & A literature conclusions that overvaluation of acquirers is related to market timing behavior of managers in making takeovers (Myers and Majluf, 1984; Shleifer

Table 7. Market Timing and Determinants of Abnormal Returns in Oil and Gas Acquirers

CAAR (x,x) = β_0 + β_1SIZE + β_2NATION + β_3MARKET TO BOOK + β_4ROA + β_5LEVERAGE + β_6FIXED ASSETS + β_7 FREE CASH FLOW + β_8 DEAL VALUE + β_9 OIL PRICE CHANGE + β_{10} GAS PRICE CHANGE + error

Above is estimated using OLS regression reporting standardized coefficients where:
CAR (x, x) = Cumulative Abnormal Returns for event windows (-1,0), (0,+1)
SIZE = Natural logarithm of total assets
NATION = Dummy of 1 representing Canada, O for United States
ROA = Net Income / Total book value of Assets
LEVERAGE = Total Debt / Total Asset
FIXED ASSETS = Fixed Assets / Total Assets
FREE CASH FLOW = (EBITDA - Cash Out Investing Activities) / Total Sales
DEAL VALUE = Deal Value / Total Assets
DEAL TYPE = Merger or Tender offer, a dummy of 1 identifies tender offers
OIL PRICE CHANGE = change in yearly WTI crude oil prices, $P_t - P_{t-1}$, relative to merger year
GAS PRICE CHANGE = change in yearly natural gas prices, as above

Acquirer Results	CAR -1,0 P_o-P_{t-2}		CAR 0,1 P_o-P_{t-2}		CAR 1,0 P_0-P_{t-2}		CAR 0.1 P_0-P_{t-2}	
Intercept	0.000		0.000		0.000		0.000	
	(-0.24)		(0.93)		(0.35)		(0.96)	
Total Assets	-0.058		-0.034		-0.052		-0.028	
	(-0.80)		(-0.48)		(-0.72)		(-0.4)	
Nation_(dummy)	0.099		0.172	**	0.101		0.174	**
	(1.20)		(2.13)		(1.23)		(2.15)	
Market to Book Value	-0.064		-0.174	**	-0.068		-0.176	**
	(-0.88)		(-2.42)		(-0.93)		(-2.43)	
ROA	0.027		-0.037		0.030		-0.035	
	(0.31)		(-0.43)		(0.34)		(-0.41)	
debt ratio	0.184	**	0.162	**	0.191	**	0.167	**
	(2.29)		(2.03)		(2.35)		(2.09)	
fixed asset ratio	-0.169	**	-0.267	***	-0.174	**	-0.269	***
	(-2.15)		(-3.45)		(-2.2)		(-3.45)	
Free cash flow	-0.255	***	-0.209	***	-0.254	***	-0.209	***
	(-3.09)		(-2.57)		(-3.07)		(-2.55)	
Deal value by assets	-0.042		-0.127	*	-0.028		-0.116	
	(-0.57)		(-1.77)		(-0.37)		(-1.57)	
Deal Type					-0.066		-0.048	
					(-0.91)		(-0.68)	
Oil Price Change Pt-Pt-1	-0.362	***	-0.143		-0.364	***	-0.128	
	(-3.21)		(-1.29)		(-3.17)		(-1.13)	
Gas Price Change Pt-Pt-1	0.338	***	0.270	***	0.334	***	0.251	**
	(3.11)		(2.53)		(2.99)		(2.28)	
Number of Firms	186		186		185		185	
F Value	3.43		4.07		3.18		3.67	
Pr > F	0.000		<.0001		0.001		0.000	
R-Square	0.164		0.189		0.168		0.189	

and Vishny, 2003; Dong et al., 2006, Rhodes-Kropf et al., 2005). Next, it appears that debt is beneficial to acquirers. Debt is significant at the five percent level or less and positively related to takeover returns. Debt use is valuable because it leverages returns to the acquirer. More unique to the oil and gas industry, the degree of fixed asset use appears to be detrimental to acquirer returns. Fixed asset ratio is significant at the one and five percent level or less and negatively related to takeover returns. Because fixed assets in extractive industries are essentially unmovable, firms with high fixed assets cannot mobilize their assets to exploit value creation through synergies and cost reductions. Hence, this can explain the negative relationship with announcement returns.

Free cash flow, as expected, plays a large role in explaining poor takeover returns. It seems particularly applicable to firms in the oil and gas industry. As shown in Table 7, free cash flow is significant at less than one percent level and negatively related to event window returns. Hence, as proposed, results suggest that free cash flows in this industry are clearly related to underperforming M & A. Deal value is significant at the ten percent level or less and negatively related to return performance. In sum, in our examination of acquirer performance surrounding takeovers suggest there are industry specific pattern of determinants for the oil and gas industry.

We now turn to explanations to target takeover performance, particularly the effect of changes in commodity energy prices. Table 8 presents the results of determinants of CAAR returns for the combined Canadian and US targets; each of the model regressions are significant with adjusted R-squares from 8.9 to 13.4 percent.

Again, oil and gas price changes are the key variables of interest to our theoretical proposition. That is, rising commodity prices, influence target managers in selling their firms. We posit that managers time the sale of takeovers when they notice significant increases in underlying oil and gas prices. We find results supporting our proposition in oil and gas price changes between two years before and one year before the merger. Indeed, we find that oil and gas price changes are significant and negatively related to target performance at the one percent level or less. This negative relation implies that larger changes in gas prices are related to lower target takeover returns. Larger oil and gas price increases could lead some managers to overvalue their own firm and the benefits of the takeover. This too, could be consistent with the theoretical consequence of stock market price driven acquisitions (Shleifer and Vishny, 2003). Consequently, at the precise event day of takeover, the overvaluation of the takeover or managerial hubris (Roll, 1968) are revealed by a realistic and efficient market.

Table 8. Market Timing and Determinants of Abnormal Returns in Oil and Gas Targets

Target CARs	CAR -1,0 Po-Pt-1	CAR-1,0 Pt-1-Pt-2	CAR 0,1 Po-Pt-1	CAR 0,1 Pt-1-Pt-2
Intercept	0.000	0.000	0.000	0.000
	(2.58)	(2.32)	(1.92)	(2.18)
ROA	0.002	-0.030	-0.055	-0.076
	(0.03)	(-0.35)	(-0.66)	(-0.91)
Leverage	-0.030	-0.030	0.026	0.007
	(-0.21)	(-0.21)	(0.19)	(0.05)
Size	-0.029	-0.022	0.022	0.015
	(-0.28)	(-0.21)	(0.22)	(0.15)
Investment Growth	-0.087	-0.080	-0.113	-0.101
	(-0.64)	(-0.59)	(-0.84)	(-0.76)
Net EPS	-0.067	-0.089	-0.098	-0.101
	(-0.79)	(-1.05)	(-1.18)	(-1.22)
Nation Dummy	-0.154 *	-0.076	-0.124	-0.041
	(-1.71)	(-0.84)	(-1.40)	(-0.46)
Fixed Asset turnover ratio	-0.100	-0.141	-0.161 *	-0.215 **
	(-1.06)	(-1.47)	(-1.73)	(-2.29)
Market to Book Value Equity	0.048	0.022	0.008	0.006
	(0.62)	(0.30)	(0.11)	(0.08)
Oil Price Change Pt-Pt-1	-0.126	-0.323 ***	0.052	-0.355 ***
	(-1.62)	(-3.85)	(0.68)	(-4.31)
Gas Price Change Pt-Pt-1	-0.225 ***	0.020	-0.324 ***	-0.040
	(-2.91)	(0.26)	(-4.25)	(-0.53)
Number of Observations	177	177	177	177
F Value	1.610	1.900	2.310	2.570
Pr > F	0.107	0.049	0.014	0.007
R-Square	0.089	0.103	0.122	0.134

T-statistics are reported in parenthesis below each coefficient, and significance levels are indicated by: * at the 10% level ** at the 5% level *** at the 1% level

6. Robustness of Results

We perform additional analyses to affirm the robustness of our results. For the set of Granger causality results on oil prices and takeover activity, as well as oil prices and takeover

performance, we use another measure of oil price. Namely, we use an energy price index to test the same hypothesized relationships. Our results here are the same as found with using Western Texas Intermediate crude oil prices.

With respect to the results on determinants of abnormal return performance, the issue of multi-collinearity between independent variables is evaluated to be a non-issue. Table 8 displays results of a correlation analysis of the explanatory variables. All but one of these eleven variables appear to have a correlation coefficient less than 0.60; hence, multi-collinearity is not an issue amongst these factors. One factor, Return on Assets, ROA is significantly negatively correlated to deal value (scaled by assets) with a correlation coefficient of -0.75. As this is strongly negatively correlated, we interpret these factors as having different linear relationships with the dependant variable on return performance. Hence, we view these factors to not pose a multi-collinear issue. Numerous specifications of these regressions are examined including with or without White's correction for heteroschedasticity; these analyses yield similar results.

CONCLUSION

We offer a new theoretical proposition a "commodity price driven acquisition" hypothesis. We apply this particularly to the oil and gas industry in which managers time commodity prices to make their mergers and acquisitions although it should be applicable to commodity producing industries. We find strongly supportive evidence for this motivation for takeover, evidenced by energy prices having a bi-causal relationship with the number of M&A deals in the oil and gas industry over time. Moreover, energy prices have a bi-causal relationship with acquirer and target announcement return performance. In examining takeover performance, differences in announcement return patterns are found between Canadian, American and foreign M & A deals amongst oil and gas firms. Interestingly, takeover performance is influenced by changes in oil and gas commodity prices. This suggests that market timing has negative takeover valuation consequences consistent with overvaluation of takeover benefits. Taken together, the overall findings are consistently supportive of this commodity price driven motivation for takeovers.

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