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THE IMPACT OF CROSS-BORDER M&A ON  
PERFORMANCE OF ENERGY FIRMS

by  
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A research project submitted in partial fulfillment of the  
requirements for the degree of Master of Finance

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## **Abstract**

The impact of cross-border merger and acquisitions on performance of  
energy firms

by

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The purpose of this study is to evaluate the performance of the Canadian energy sector companies and compare their performance before and after cross-border M&A. This strategy enables us to examine the effectiveness of cross-border M&A. In addition, this allows for a possible resource for decision making on Cross-border M&A in Canada energy sector. From the result, significant abnormal returns are existed. It shows the Canadian company can earn benefit after Cross-border M&A (CBMA).

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## **Chapter1**

### **Introduction**

#### **1.1 background**

Cross-border mergers & acquisitions (M&A) have received great attention from both scholars and managers of companies over the last four decades as they attempt to explain the success of the worldwide resource rearrangement. As emerging countries, such as China are still growing, the energy resource demands are also increasing. Therefore, cross-border M&A is necessary for the companies to find resources out of the homeland and make a huge profit from it.

Canada has a large base of unexploited natural resources. After the last financial crisis, which started with the Lehman Brothers bankruptcy, most North American companies experienced depression. Canadian companies were not capable of avoiding this. However, the interesting part is that merger and acquisition increased during the economic recovery period. That resources need to be rearranged. Most acquired companies are paid with cash. That is another interesting point when a lot of companies run out of cash.(Appendix A)

The acquired companies which are in two different countries, combine together and they need to run the business from two different cultures. For example, if a Chinese company bought a North American company and combined the businesses together, The Chinese company would have a totally difference culture in running business,

which might lack of the experience to manage the company in the western business world. Its hard to tell if the company is going well or not after the merger.

## **1.2 Objective of the study**

This paper will try to use event study to test whether abnormal returns (AR) is exist and suppose to explain the impact on the performance before and after CBMA of Canadian energy firms.

## **1.3 purpose of study**

This paper would like to find out a way to evaluate the Canadian energy company based on stock performance under Toronto securities exchange(TSX), it will compare the performance before and after cross-border M&A and it will find out a way for the company to examine the effectiveness of cross-border M&A. it will not only evaluate the performance, but also a possible resource for decision making on CBMA in Canada energy sector.

## **1.4 Outline**

The objective of this study is to provide a contribution to use models to evaluate the performance after the energy firms completed the cross-border M&A. It contains five parts, of which this introduction is the first part, the second chapter is a review of recent research, chapter 3 provides the detail of the methodologies and data, chapter 4 shows the analysis of the results of event study, and chapter 5 gives the conclusions.

## **Chapter 2**

### **Literature review**

#### **2.1 The role of CBMA**

The research on Cross-border Mergers and Acquisitions(CBMA) has grown over the decades, covering the different industries in different countries globally. This requires the need to rearrange and strengthen the competitiveness in their business. Kang and Johansson(2000) gave a summary of the 1990s cross-border M&A deals, and They noticed that most cross-border M&As are taking place in the Organization for Economic Co-operation and Development(OECD) area. The function of M&A is to focus on the adjustment to over-capacity and reduced growth prospect in need in order to maintain the competitiveness.

#### **2.2 Impact of Cross-border M&A**

In the past decade, most empirical analysis of CBMA's has been based on event studies. These previous studies can be divided into four categories based on their results. First, some studies such as done by Wan and Wong(2009) make the conclusion that any positive or negative information or event can be reflected in abnormal returns in CBMA. Second, Other studies focus on the relationship between firm size and CBMA. They reflect the smaller size of the firm, the more profits it makes after CBMA. However, there is a potential leverage risk that comes with this benefit.



### **2.3 Benefits from Cross-border M&A**

The benefits from CBMA for each company may vary. Nam-Hoon Kang, and Sara Johansson (2000) had mentioned “Cross-border mergers and acquisitions can yield dividends in terms of company performance and profits as well as benefits for home and host countries when successful industrial restructuring leads to greater efficiency without undue market concentration. Benefits from such M&As are increasingly intangible and found in economy-wide spillover effects. They can help revitalize ailing firms and local economies and create jobs through the restructuring process, acquisition of technology and productivity growth.”

They also talk about CBMA can have positive impact on growth and employment, particularly if governments have policies which facilitate the associated industrial restructuring, accelerating the globalization of industry and reshaping industrial structure at the international level.

### **2.4 The evaluation of Cross-border M&A**

Sadorsky(2001) claims several studies have been done on the CBMA of energy firms performance evaluation, including multifactor pricing model and the crude oil return. The crude oil return is a importance element to determinant of stock returns of energy companies. The main idea is to use a portfolio of oil stock from the Toronto stock exchange. The crude oil return is correlated with the returns on the stocks. It shows the adjusted R-square increase from 0.04 to 0.22 when the crude oil return is

added into the market model as explanatory variable. Based on this result the test will be more easier.

Cowles (1933) start several tests to shown the efficient market hypothesis (EMH). He found that the best performing fund was not an outlier, the professional recommendation did not exhibit high performance. Then he found that the professionals generated the same return distributions as did it in random. A. Craig mackinlay., (1997) was mentioned that “the companies based on whether the companies reported strong profits, normal earnings or a loss in the earnings announcements. The results of his event studies show that companies which reported good news showed higher cumulative abnormal returns, especially on the event day (Day 0).”

## **Chapter3**

### **Methodology**

#### **3.1 Description**

The event study measures the impact of a specific event on the value of the company's securities, which relies on market efficiency. This empirical study analysis is intended to compare the performance before and after the CBMA happens. It supposed to figure out the if Canadian energy firms can or can not get improvement under the CBMA activity.

It set up a time range table from Dec 31,2009 to Aug 1<sup>st</sup>,2013(Appendix A). In this table, it also had to satisfy following characters: The target company should be Canadian company only and the stock should be already exchanging in the TSX. The combination should be completed. Any failure of CBMA will not be shown in this table. To satisfy the factor above, my list cover 16 Canadian energy firms in this time range. It can be checked out from the Appendix A and B for the companies detail.

It perform an analysis based on the database, daily stock price will be proved in this data, which start from 2010 to August 1st 2013 about the companies on the list. In this analysis, it will assume the event as a single deal, it means it will not discuss the second time or the third time thing here, ignored those things may have impact on the CBMA activities before merging, which include the overlapping events.

### 3.2 Rationale

The rationale for event study was used to determine the impact on Canadian energy firm, it tested market reaction to CBMA on security price. Efficient Market Hypothesis (EMH) describe that most investor's behavior is rational in the market trading and they do trade-off to balance the risk and return. The current stock price is a good sign to represent its intrinsic value much closer in market. It also explain the demand and supplies (Eugene F. Fama, 1969). Suppose it is in Semi-strong form EMH.

#### How Tests Are Structured

1. Selected announcement date as  $t=0$  ( $R_0$  means the return on the announcement date)
2. Then set up 120days, 60days, 30days before  $t=0$ , and same range after announcement date.
3. Examine prices and returns over time (from Dec 31, 2009 to Aug 1<sup>st</sup>, 2013)
4. Returns are adjusted to determine if they are abnormal return

120days---60days---30days---Announcement date---30days-----60days----120days

$R_{-1}$ ----- $R_{-2}$ ----- $R_{-3}$ ----- $R_0$ ----- $R_1$ ----- $R_2$ ----- $R_3$

When the results come out, on the purpose it should compare the returns in different period with  $R_0$  to find out whether the CBMA have significant impact on Canadian

energy firms. Otherwise, if the answer is positive, it should say that the CBMA does influence the company's performance. In the mean time, if the post-return(the return after CBMA happens(after announcement date) is higher than the ex-return. The companies should have increase their value after the CBMA transactions.

The study collected daily stock price and volume (historical price of 120 days before announcement and 120 days after that in a range of 2010-August 2013) of 16 companies(Appendix A) on TSX from Bloomberg financial system. The TSX index is choice as the benchmark. Then use the formula to calculate the actual return. The estimated return will provided by market model, the excess return came out with the deduction from actual return to expected return. If the result is positive the abnormal return is existed.

It have to compute the cumulated abnormal return by 120 days, 60 days, and 30 days for each of the companies.

### **3.3 Models**

#### **3.3.1 Return on securities and the market:**

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Where:

$R_t$ = return on stock during period t

$P_t$ = stock price during period t

$P_{t-1}$  = stock price during period t-1

**3.3.2 The following formula, it represents the Market Model (Excepted return of securities):**

$$R_{i,t} = \hat{\alpha}_i + \hat{\beta}_i R_{m,t} + \epsilon_{i,t}$$

Where

$R_{i,t}$  is the actual daily return of security i during period t

$\hat{\alpha}_i$  is the intercept of the equation for security i

$\hat{\beta}_i$  is slope of the equation for security i

$R_{m,t}$  is return on the market during period t

$\epsilon_{i,t}$  is error term

Excess return=(Actual-expected):

$$e_t = \text{Actual} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$$

**3.3.3 Abnormal return (AR) and Average Abnormal Returns(AAR) and Average Cumulative Abnormal Returns(ACAR)**

Abnormal return (AR) :

$$AR_{i,t} = R_{i,t} - E(R_{i,t}) = R_{i,t} - E(\hat{\alpha}_i + \hat{\beta}_i R_{m,t})$$

Cumulative abnormal return:

$$CAR_{i,t} = \sum_{k=1}^t AR_{i,k} = CAR_{i,t-1} + AR_{i,t}$$

Average Abnormal Returns(AAR):

$$AAR_t = \frac{1}{N} \sum AR_{i,t}$$

Cumulative Average Abnormal Returns(CAAR):

$$CAAR_t = \frac{1}{N} \sum CAR_{i,t}$$

### **3.4 Data sources**

THE most data resources I selected and collected from Bloomberg financial system.

Then used the excel tools to calculated it. The TSX index as benchmark is collect

from: <http://web.tmxmoney.com>

The risk free rate is collected from: [www.bankofcanada.ca](http://www.bankofcanada.ca)

## Chapter 4

### Analysis of Results

#### 4.1 Overview

The data of daily stock price of 16 companies are based on the time range from Dec 31 2009 to Aug 1 2012. The target companies are focus on the Canadian energy and the acquired companies are limited on not only Asian countries (even the most of them are Chinese companies). Appendix C shows the results of CAAR. Those set separately as 120 days 60 days and 30 days. The CAAR of those companies in

Positive and negative trends are as following (tickers):

Positive part	WTN CN; 0851201D CN;	DAY CN; UUU CN;	UTS CN; CS CN;
Negative part	NXY CN; PRQ CN; PVE CN; LTS CN; CLT CN; NAE CN; FES CN; PWT CN; BIR CN; ECA CN;		

Above those trends elucidate the greater impact on the negative part. According to this phenomenon, most companies valuation had been reduced. Only 37.5% of energy firms gain benefit. Which insinuate the performance on energy firms after CBMA are not very well in TSX. It need to point out that the Sinopec Daylight Energy Ltd(DAY CN ) which acquired by Chinese company is the only one got a great return, the other Chinese companies when they finished the CBMA movement. they went to negative side.



## 4.2 Regression analysis

I had test statistic analysis for each company based on the benchmark as TSX index on Bloomberg system. It is observed that higher returns of companies are associated with higher levels of systematic risk, which is consist with the capital market theory. It is clearly evident from the higher beta coefficient value of 1.058 (0851201D CN) associated with the highest CAAR(120 Days: 93.44327, 60 Days:78.63394; 30 Days: 57.35358)

<b>WTN CN</b>	93.44327	78.63394	57.35358
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compared to beta coefficient of 0.576 of lowest CAAR as following:

<b>NXY CN</b>	-70.2172	-52.438	-35.20467
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For this case, WTN CN indicated that alpha is 0.546, adjusted beta is 1.581 .NXY CN indicated that alpha is 0.241,adjusted beta is 0.576.the value of beta associated with the sensitivity of the security of market return. The greater value of beta means these securities are sensitive to the market change.

R-square give a distance measurement between the resulting line to the data points. It means how well does a stock match to the market model. A high R-squared indicates the stock's performance pattern have been in line with TSX. Otherwise, it doesn't act much like the index.

WTN CN shows the R-square is 0.146,NXY CN is 0.005,those low R- squared means I should ignore the beta. The movement of those stocks were not following the TSX pattern.

### **4.3 Abnormal return results**

I used daily stock price calculated with each stock, and daily price of TSX. The event window is around 240 days, which means 120 days before announcement date and 120 days after(it also include 60 days before and after,30 days before and after).All the result is included in Appendix C.

## **Chapter5**

### **Conclusion**

the purpose of this paper is to find out whether the CBMA have significant impact on Canadian energy firms and how the risk related to the companies.

The outcome of analysis indicated that:

1. A significant positive return has happened after CBMA, it can create a great value for Canadian companies.
2. An abnormal return in event window existed, which shows CBMA has impact on the stock
3. The movement of those stocks were not following the TSX pattern.
4. the P-value is higher than 0.05 which we do not reject  $H_0:AAR=0$ , the market is efficient, it imply that the stocks price follow random walk.

the conclusion shows the market is efficient, the investor can not gain abnormal return, it was a random walks in stocks prices. The most importance is that companies can earn benefit after CBMA.

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**Appendix A**
**COMPANY LIST****Announce**

<b>Date</b>	<b>Target Name</b>	<b>Acquirer Name</b>
2012/7/23	Nexen Inc	CNOOC Ltd
2012/6/28	Progress Energy Resources Corp	Petroliam Nasional Bhd
2012/1/16	Provident Energy Ltd	Pembina Pipeline Corp
2010/11/18	Western Coal Corp	Walter Energy Inc
2012/12/21	Lightstream Resources Ltd	Shareholders
2012/10/17	Celtic Exploration Ltd	Exxon Mobil Corp
2011/10/9	Sinopec Daylight Energy Ltd	China Petrochemical Corp
2012/3/23	NAL Energy Corp	Pengrowth Energy Corp
2012/2/20	Flint Energy Services Ltd	URS Corp
2010/7/7	UTS Energy Corp	Total SA
		Marubeni Corp,Winsway
2011/10/31	Grande Cache Coal Corp	Coking Coal Holdings Ltd
2010/6/8	Uranium One Inc	Rosatom Corp
2010/5/13	Penn West Petroleum Ltd	China Investment Corp
2011/4/17	Capstone Mining Corp	Korea Resources Corp
2010/5/11	Birchcliff Energy Ltd	Nevada Capital Corp Ltd
		Riverstone Holdings
2010/4/26	Encana Corp	LLC,Carlyle Group LP/The

(Fund: Riverstone/Carlyle

Global Energy & Pow...

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**Appendix B**
**Announced****Announce****Total Value****Target****Date****Target Name****(mil.)****Payment Type****Deal Status****Ticker**

2012/7/23	Nexen Inc	17431.65	Cash	Complete	NXY CN
2012/6/28	Progress Energy Resources Corp	5405.26	Cash	Complete	PRQ CN
2012/1/16	Provident Energy Ltd	3896.43	Stock	Complete	PVE CN
2010/11/18	Western Coal Corp	3855.86	Cash or Stock	Complete	WTN CN
2012/12/21	Lightstream Resources Ltd	2961.82	Undisclosed	Complete	LTS CN
2012/10/17	Celtic Exploration Ltd	2955.28	Cash and Stock	Complete	CLT CN
2011/10/9	Sinopec Daylight Energy Ltd	2750.87	Cash	Complete	DAY CN
2012/3/23	NAL Energy Corp	1731.48	Stock	Complete	NAE CN
2012/2/20	Flint Energy Services Ltd	1351.83	Cash	Complete	FES CN
2010/7/7	UTS Energy Corp	1253.98	Cash	Complete	UTS CN
2011/10/31	Grande Cache Coal Corp	1054.78	Cash	Complete	0851201D CN
2010/6/8	Uranium One Inc	922.48	Cash	Complete	UUU CN
2010/5/13	Penn West Petroleum Ltd	428.39	Cash	Complete	PWT CN
2011/4/17	Capstone Mining Corp	176.99	Cash	Complete	CS CN
2010/5/11	Birchcliff Energy Ltd	N/A	Cash	Complete	BIR CN
2010/4/26	Encana Corp	N/A	Undisclosed	Complete	ECA CN



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**APPENDIX C**
**CAAR ANALYSIS (include 16 companies)**

<b>TICKERS</b>	<b>120 DAYS</b>	<b>60 DAYS</b>	<b>30 DAYS</b>
<b>NXY CN</b>	-70.2172	-52.438	-35.20467
<b>PRQ CN</b>	-23.6252	-17.6363	-11.4738
<b>PVE CN</b>	-44.9389	-34.0332	-20.4812
<b>WTN CN</b>	93.44327	78.63394	57.35358
<b>LTS CN</b>	-0.97032	-0.8269	-0.7663
<b>CLT CN</b>	-7.24107	-5.4416	-3.58671
<b>DAY CN</b>	13.82464	9.287718	5.78409
<b>NAE CN</b>	-14.8053	-11.3611	-7.01695
<b>FES CN</b>	-32.3163	-25.3399	-17.718
<b>UTS CN</b>	33.96225	24.37393	15.04508
<b>0851201D CN</b>	8.91774585	4.779002278	3.225707978
<b>UUU CN</b>	2.029021	1.633731	1.115905
<b>PWT CN</b>	-18.8681	-14.1357	-9.50845
<b>CS CN</b>	57.76748	42.69988	24.61023
<b>BIR CN</b>	-8.46867	-6.12267	-4.16171
<b>ECA CN</b>	-10.0479	-7.63291	-5.06181