IPO Underpricing in Canadian Energy Sector

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Abstract

This paper investigates empirical existence of theories of IPO underpricing in Canadian Energy Sector. The study based on IPO listed in all Canadian stock exchanges from 1990-2014 analyzes level of IPO underpricing and its determinants. OLS regression is used to distinguish the relationship between various independent variables with dependent variable-level of underpricing. The result reveals that offer size, offer price has negative and significant effect on IPO underpricing, where as offer timing has very little explanatory power. Free float has a positive and significant effect on Canadian energy sector IPO under pricing. The significant effect of these variables identifies the presence of size based theory, winners curse theory in IPO pricing of Canadian energy sector.

Keywords: Initial Public Offering (IPO), Underpricing and Canadian Energy Sector.

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CHAPTER 1

Introduction

1.1 Background:

Initial Public Offering (IPO) also known as stock market launch, is a process in which firms sell their stocks to the public for first time to raise capital through securities exchange. This process is known to cause three different anomalies to occur in the market Rajan and Servaes (1996) identify these as: Underpricing, Hot issue markets and Long run underperformance. Since decades IPO under pricing is one of the major concerns of investors and analysts, several researches and empirical studies have been conducted on the issue. Though IPO underpricing is common issue to both developed and developing markets, the factors responsible for it tend to vary based on market size, regulations, business sector, trading volume and uses of funds. IPO underpricing leads to generate interest in investor and flipping gives an opportunity to investor who bought the share at offer price but at the same time causes potential loss to issuer.

Most renowned one is information asymmetric theory based model –adverse selection model(Rock-1986) supported and extended by Beatty and Ritter-1986, Carter and Manaster (1990) that informed investors are more successful in selecting good IPOs (adverse selection model) and the exante uncertainty produces more underpricing to have greater return deliberately derived for informed investor. Baron (1982) on his moral hazard model and Booth smiths(1986) certification model supported by Titman and Trueman (1986) , Megginson and Weiss (1991) and Kumar And Tsetsekosc(1993) reputational capital paradigm and Allen and Faulhabers signaling model (1989) close to model of Griblatt Hwang (1989) and Welch (1989) inspirit of Ibbotsons (1975) and

Leyland and Pyle (1977) and Benveniste and Spindt s truthful revelation model (1989) supported by Bevenite and Busaba (1996) and Aggarwal (2003) and Petway and Kaneko (2003) and Robinson and Pengs (2004) agency theory model of IPO and Ellul and Pagano's (2006) after market liquidity suggest consistency of information asymmetry in IPO pricing (underpricing). Another school of thought showed underpricing phenomena from another dimension. They showed its not deliberate rather depends on some irrational behavioral aspects. Shillars (1990) impresario hypothesis and Matthew Dawson (1984) anchoring effect supported by Geoffrey and Swift (2009) identifies behavioral aspect of investor for IPO underpricing. Based on studies by Ritter (2002) IPO underpricing in USA is 15.8%, in India 35.5 %, in China 164.7%, in Canada is 11%

1.2 Overview:

This paper mainly concentrates on the determinants of IPO underpricing in Energy sector of Canada. In Canada, Energy sector is one of the fastest growing sectors attracting large number of investors. It mainly consists of six sub sectors namely petroleum, gas, electric power, coal, nuclear power, and renewable energy. According to equityclock.com survey results Canadian energy sector average return during past 20 periods is 11.3% and outperformed S&P/TSX composite by 6.8%. Energy sector has recorded highest frequencies of success when compared to other sectors. Based on Price Waterhouse Coopers (PwC) Canadian IPO market survey 2010, during the last decade, energy sector occupies 16% in total IPOs with CAD $6.8 billion. There were 129 energy & utility offerings during this period. In last three years energy & Utilities issues represented about 23% of Canadian IPO market. Since number of studies on Canadian IPO issues in energy

sector are less and most of studies are dated to 1980s & 90s, sector needs for further research in IPO underpricing and in long- run under performance.

1.3 Objective:

Main objective of this paper is to investigate the degree of underpricing in Canadian energy sector IPO issues. Data set comprises of 430 IPOs from the year 1990-2014. The estimated effect of independent variables such as offer price, offer size, offer timing and free float on degree of IPO underpricing has also been evaluated.

1.4 Limitations:

In this paper to analyze the effect of determinants on degree of underpricing in Canadian energy sector, sample data of 430 firms has been collected and processed. Due to lack of required data for few firms and after processing data sample the number size has been reduced to 323. There is a conflict in foundation date for few firms due to mergers and acquisition and several other corporate factors. Due to this, the age of the firm has not been considered for analysis. Due to lack of proper data on underwriter reputation, ownership retention, over subscription rate, method of issue, market capitalizations at IPO were limited for analysis.

1.5 Structure of the Paper:

This paper consists of; Chapter1 which illustrates the background of IPO and IPO under pricing along with a brief overview of Canadian energy sector. Chapter2 comprises of literature review and researches. This chapter focuses mainly to explain different schools of thought, findings and conclusions by various researchers on IPO Under pricing.Chapter3 explains about various sources of data and different methodologies applied on the topic. This chapter is followed by the use of least squares linear regression

model to analyze the collected data samples. Chapter4 encompasses of the results and analysis outcomes. Chapter5 is the conclusion part of this paper which is comprised with conclusion and recommendations of the research findings.

CHAPTER 2

Literature Review

2.1 Literature Review:

Ritter et al., (1984) asserted that many IPOs in developed and developing economies are on average underpriced. This claim negates the efficient market hypothesis theory which under certain circumstances does not yield optimum results. Studies on dynamic behaviour of IPO underpricing have been conducted by various researchers using various theories of market behaviour and factors impacting on IPO underpricing.

An unusual first day return of 12-18% was first reported as IPO underpricing by Ibbotson (1972) and was also documented later in several other papers & countries. Among various other theories the predominant ones were which explained the informational use problems such as Winners curse theory or informational cascade mentioned by Rock (1986) or Welch (1992).

Other theories related to various market participants are also crucial for the study. Schultz and Zaman (1994) looked at the behavior of underwriters in the aftermarket of IPOs and Aggarwal (1998) pointed out the importance of an agreement between underwriter and issuing company for the pricing process of IPOs. Ruud (1993) introduced, stabilization as one explanation for the underpricing of IPOs

2.2 Asymmetric Information Theory:

Among various theories to study the IPO underpricing, asymmetric information theory based model is one of the most prominent also known winners curse model, which according to Rock (1986) is, the more informed investors are about an IPO, the better are the chances of selecting a good IPO (adverse selection model) supported by Beatty &

Ritter (1986). Rock even states that in an adverse selection model (Winners Curse Model), the uninformed investors will end up with bad IPOs due to lack of information and in order to attract these uninformed investors; underwriters generally formulate an underpricing strategy. Carter & Manaster (1990) iterated that for informed investors the returns are substantially high when the exante uncertainty produces more IPO underpricing. Some informed investors will have more information about the sector or the industry in which the IPO is categorized and know more about the competition and future trends which provides them an edge over other players in the market.

2.3 Moral Hazard Theory:

According to Baron (1982) supported by Nygaard and Myrtveit (2000), moral hazard creates problems when managers do not reveal the true performance of the firm to the underwriter and more optimistic view about the future performance of the firm is assumed when evaluating the intrinsic value and managers refrain from their duties to act in a more productive way which places boundaries on the growth of the firm. Further Booth smiths (1986) certification model supported by Titman and Trueman (1986) assumes that the underwriter will certify issue price to justify the informed and uninformed investors.

2.4 Reputational Capital Paradigm:

Megginson and Weiss (1991) and Kumar and Tsetsekosc(1993) supported the theory of reputational capital paradigm which emphasis on general perception of market participants that they associate less risky IPOs to reputed underwriters and assume that the market value of IPO firm is true thus leading to less underpricing activity. Also the

investors who are existing clients will tend towards the reputation of the underwriting firm since their quality of service was better and will not leave them over other firms.

According to Allen and Faulhabers signaling model (1989) close to model of Griblatt Hwang (1989) and Welch (1989) inspirit of Ibbotsons (1975) support that underpricing of an IPO issue will leave investors with good impression about the underwriting firm and future issues are lot easier to sell by the same firm thus leading to an IPO underpricing after market activity. Reputable firms before going public should send signal or message to overcome asymmetric information distribution between investors which should be expensive to duplicate or imitate by no name companies thus maintaining stable market activity.

2.5 Truthful Revelation Model:

Leyland and Pyle (1977) and Benveniste and Spindt s truthful revelation model (1989) developed a theory of underwriting to improve market efficiency of IPO market in which the actual demand for the issue and market conditions has to be revealed to the issuer thus underwriters can reduce the IPO underpricing activity after market issue to some extend thus leaving less money on the table.

2.6 Agency Theory Model:

Bevenite and Busaba (1996) and Aggarwal (2003) and Petway and Kaneko (2003) and Robinson and Pengs(2004) supported agency theory model of IPO which focuses on resolving conflict issues if exits in an agency which will be usually between Principals (Investors) and Agents(Underwriter- Issuer). It addresses two major issues, one when they have conflicting goals and the other when they have different attitudes towards risk. Underwriters prefer to retain to fulfil their obligation for aftermarket price support of the

IPO firm whereas higher level of ownership for investment public induces the fear of varying price among investors.

Islam and Ali (2010) observed Dhaka Stock Exchange (DSE) IPO underpricing and by performing Regression Analysis to the IPO determinants discovered that the offer price and the size of IPO firm are positively related to the degree of underpricing. They even found that the age of the IPO firm and offer timing has no relevance to the IPO underpricing.

Bansal and Khanna (2012) analyzed IPOs that were listed at BSE (Bombay stock exchange) during (April-1999 to Dec-2012) and found a significant difference between the IPO's priced through book building and fixed price option. The degree of underpricing also depended on the firm's age, market cap and even retail subscriptions. The impact due to these determinants on retail and institutional investors was also noticed during this analysis.

2.7 After Market Liquidity:

Ellul and Pagano's (2006) after market liquidity showed signs of consistency of information asymmetry in IPO underpricing. They support that after market liquidity may arise due to information asymmetry after the IPO, the less its liquidity is the more is the IPO underpricing.

2.8 Size Based Theory:

Ritter (1987), Chalk and Peavy (1990), Jog and Riding (1987), Suret, Cormier and Lemay (1990) and Clarkson and Merkley (1994) supported a theory based on the results that small IPOs are more riskier than large IPOs and subsequently smaller IPOs are more underpriced than larger IPOs. Carter and Manaster (1990) documented that the bigger the

IPO is, the greater the potential gains from acquiring information about the issue because institutional investors consider not only the degree of uncertainty but also the size of the IPO.

2.9 Behavioral Hypothesis Theories:

Contradicting the above theory, a school of thought also suggests that IPO underpricing depends on the irrational behavioural aspects of the market participants. According to Shillars (1990) impresario hypothesis theory, impresarios (Investment Bankers) play a pivotal role by creating a hypothetical excess demand with a self trading strategy at higher prices and creating an impression among public that there is an actual demand.

Matthew Dawson (1984) anchoring effect also known as cognitive bias theory where it has been noticed that humans act on a single piece of information available in making a decision, also supported by Geoffrey and Swift (2009) identifies that the deciding factor can be the behavioural aspect of investor for IPO underpricing, they also argue that IPO underpricing is not solely due to underwriters or bankers but due to overreaction of investors which fuels the price of the IPO firm immediately after market. With due respect these two schools of thought for IPO underpricing have conducted unquestionable research work but still have not reached to an unanimous solution.

2.10 Empirical Evidence in Canadian Market:

Previous research on IPO Underpricing in Canadian market states that there is about 11% to 18% of underpricing in securities issued. Shaw (1968) evidenced through his research the presence of overpricing in IPO issue. On contrary to Shaw, Heroux and McQuillan evidenced high degree of underpricing in 40% of IPO firms in Canada based on 1968-1970 data. Jog (1997) in his extended research evidenced that the degree of under pricing

has been decreased in 1980 and 1990 compared to previous years. Suret, Cormier et Lemay (1990) reported, degree of under pricing is high in IPOs issued under Toronto Stock Exchange compared to degree of under pricing in IPOs issued under Quebec Stock Saving Plan (QSSP).

Research by Falk and Thornton (1992) stated the average initial returns in Toronto Stock Exchange (TSX) IPOs 19%, Montreal Exchange (ME) IPOs 25% and Alberta Stock Exchange (ASE) IPOs 307%.

Paper by Maher Kooli and Jean-Marc Suret (September 2001) concluded that, the degree of underpricing in Canadian IPOs decreased with increase in size of issue and underwriter reputation. It also concluded that the degree of under pricing is high in mining, oil & gas, real estate and technologies sectors IPOs. Vijay. M and Allan L. Riding (1987) concluded that after three trading days, degree of underpricing had diminished.

CHAPTER 3

Methodology

3.1 Source of Data

Data set in this paper comprises of 430 IPOs from 1990 to 2014 of Canadian energy sector. The data set satisfies the following conditions

1) All IPOs are listed in Canadian securities exchanges
2) All the IPOs should have information on offer price, offer size, announced date, listing date, first trading day closing price, number of share outstanding.
3) Industry sector: Energy

Based on the data availability and standards, sample data consists of 323 firms for analysis. All information and data are available through Bloomberg.

3.2 Alternative Methodologies:

IPO under pricing data is noisy, complex and correlated. In addition, investor's behaviour and different environmental conditions add more weight to irregularities in the data. In order to estimate this kind of data, researchers are employing different methodologies.

3.2.1 Artificial Neural Networks:

This method normalizes data by examining it to develop internal representation of the relationships between the data. These networks are more responsive and adaptive to structural changes in data over time.

3.2.2 Evolutionary Models:

These models are paired with other models to improve robustness, reliability and adaptability. One of these models is rule based system which uses variables to explain whole set.

3.2.3 Two-layered Evolutionary Forecasting:

This model performs linear regression model to deal with the outliers and isolates noisy patterns. It has the ability to back test and reconstruct the model.

3.2.4 Agent Based Modeling:

This model effectively deals with autonomous behaviour of investor which is sometimes impossible to predict with variables.

To analyse IPO underpricing in this paper, linear regression model is employed. This model effectively estimates effect of independent variables by minimizing error term in sample data to define population set.

3.3 Variable Selection:

3.3.1 Dependent Variable:

According to standard methodology, Underpricing is defined as percentage change from the offer price to closing price

$$\mathbf{DUP} = \frac{\mathbf{P1-P0}}{\mathbf{P0}}$$

DUP= Degree of under pricing

P1= first trading day closing price

P0= offer price at which the share has been issued

3.3.2 Explanatory Variables:

Offer Price:

Firms choose offer price to compensate for purpose of their needs. Offer price and uncertainty are inversely related. If offer price is low level of uncertainty will be high.

H1: Sign of coefficient of Offer price estimator is negative.

Size of offer:

Offer size is the total shares firm offers for IPO. Studies by Ibbotson (1984), Chalk and Peavy (1990) and Clarkson and Merkley (1994) show inverse relationship between offer size and uncertainty. Investors estimate the uncertainty level based on offer size. That is if offer size increases then level of under pricing decreases.

H2: Sign of coefficient of Size of offer estimator is negative.

Offer Timing:

The difference between announced date and listing date is termed as offer timing. Issuers use the time difference to advertise about firm and to attract investors. Balwinder Singh and RK Mittal (2003), Taufil Mohd K.N (2007), and Bansal and Khanna (2012) found offer timing as one of the important variables in determining level of uncertainty in IPO issue. There is direct relation between offer timing and uncertainty level. If offer timing increases then degree of under pricing increases

H3: Sign of coefficient of Offer timing estimator is positive.

Free float:

Percentage of equity share issued to public to total number of shares is known as free float. This gives the information about supply side of IPO by the firm. Sohail and Nasr (2007) found an inverse relationship between free float and level of uncertainty. As free float increases then degree of under pricing decreases.

H4: Sign of coefficient of free float estimator is negative

3.4 The Model:

The sample of 323 firms listed in Canadian Stock Exchanges 1990 to 2014 out of 423 firms is analyzed using linear regression model Different variables are selected based on prior empirical studies, research theories and availability of data to find out which variables are significant in determining the degree of under pricing in Canadian energy sector. The empirical equation is as follows:

$$\mathbf{Log(DUP) = \alpha_0+\beta_1 log(Ofsiz)+\beta_2(OFP)+\beta_3(OFT)+ \beta_4(Float)+\mu}$$

Where,

Log (DUP): Degree of under price, proxy is ln $(\frac{P_1-P_0}{P_0})$.Prior empirical use was done by Sohail and Nasr (2007), Bansal & Khanna (2012)

Log (Ofsiz): offer size, proxy is ln (No. of shares offered multiplied by offer price). Prior empirical use was done by Beaty and Ritter (1986), Ibbotson (1984), Kaneko and Pettway (2003).

OFT: offer timing, Time difference from announced date to listing date (in days). Prior empirical use was done by Islam, Ali and Ahmad (2007).

Float: Free float, proxy is percentage of equity share issued for public to total issued share. Prior empirical use was done by Sohail and Nasr (2007).

OFP: offer price, proxy is the first trading day close price.

3.5 Sense of the Model:

The Ordinary Least Square Regression model has estimator based analysis and sample set of population should be normally distributed to explain the population set. The coefficient of each variable explains the degree of dependence of the explanatory variable. That is

the coefficient (βs) value indicates the percentage of variation in Independent variable due to explanatory variable, here in this paper log (ofsize), OFT, OFP, Free Float are explanatory variables and log(Dup) is the independent variable. The t-table is used to explain the significance of the variation in explanatory. R-square explains the overall explanatory power of the model. P-value gives the level of significance.

CHAPTER 4

Analysis of Results

4.1 Identification of Level of Underpricing or Over Pricing:

This section presents the level of underpricing and overpricing in the Canadian Energy Sector. Table 01 presents overall levels of IPO underpricing and over pricing in Canadian energy sector. It shows that overall level of underpricing in Canadian energy sector is 12.49% with standard deviation of 36.917. There are 260(80.99%) IPO underpriced, 54(16.824%) IPO over priced and 7(2.18%) IPO Similar priced during 1990(Jan)-2014(Jan).

Table 01: Identification of Level of Underpricing or over pricing.

	No. of companies	**Mean level**	**Maximum**	**Minimum**	**Standard Deviation**
Underpricing	260	12.49503	284.7143	0.001	36.91735
Overpricing	54	-0.2365909	-0.002	-0.9785	0.2852138
Similar pricing	7	0	0	0	0
Total	321	10.08079	284.7143	-0.9785	33.58609

4.2 IPO Underpricing on Yearly basis:

This section identifies the level of underpricing on yearly basis from 1990-2014. Table 02 illustrates yearly level of IPO underpricing in Canadian energy sector.

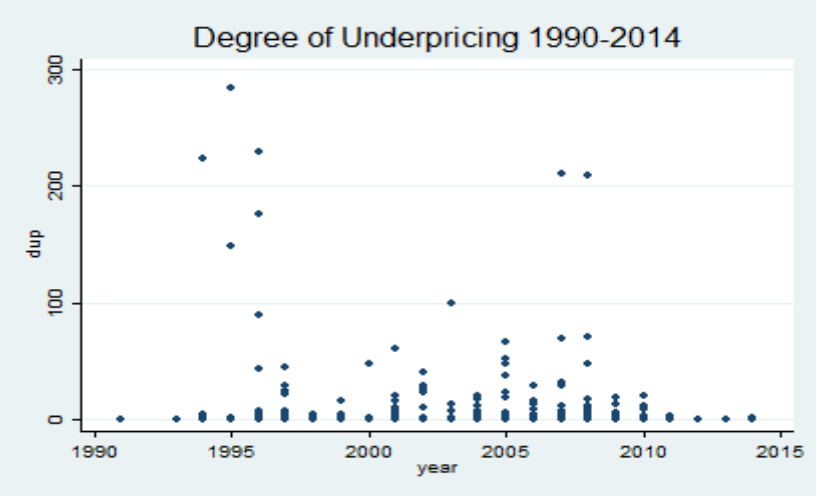
The highest degree of under pricing took place in 1995 (27.34%) with standard deviation of 78.021. The next highest level of underpricing took place in 2008 (21.714%)with stand deviation of 50.34%. Highest number of firms listed in the year 1997 of 38 but the level of under pricing was low of 5.69%.

Table 03: IPO Underpricing Yearly.

Year	No. of companies	mean level	Maximum	minimum	Standard Deviation	Percent
1991	1	-0.144071	-0.1440715	-0.1440715	---	0.31
1993	1	0.21875	0.21875	0.21875	---	0.31
1994	11	20.87501	224	-0.105263	67.37901	3.41
1995	16	27.3374	284.7143	-0.785	78.02096	4.95
1996	32	17.58876	230	-0.893333	52.00999	9.91
1997	38	5.697554	44	-0.415	11.87054	11.76
1998	12	1.271167	3.9	-0.5	1.294234	3.72
1999	5	4.286981	15.802	-0.9785	6.712418	1.55
2000	5	9.706604	47	0.173077	20.85325	1.55
2001	15	8.531422	61	-0.705333	15.74384	4.64
2002	12	10.83222	39.53333	-0.05	14.41795	4.02
2003	7	17.25752	99	0.075	36.38363	2.17
2004	24	3.036314	19.88233	-0.755	5.564211	7.43
2005	27	9.637527	66.428	-0.46	18.76457	8.36
2006	30	3.791552	29	-0.88833	7.82511	9.29
2007	24	16.46663	211.5	-0.346153	44.27771	7.43
2008	18	21.71409	209	0.065	50.34161	5.57
2009	9	4.757519	18.336	-0.355	6.489143	2.79
2010	16	2.808685	19.833	-0.22	5.640321	4.95
2011	9	0.3598342	2	-0.035384	0.6647677	2.79
2012	2	-0.012960	0.007	-0.032921	-0.0129609	0.93
2013	2	0.0850238	0.2666667	-0.022666	0.13208	1.24
2014	3	0.4371032	1	0.0166667	0.5069096	0.93

From Table 03 and graph 01 it is evident that the highest level of under pricing took place during 1994-1996 and again during 2007-2008. The highest number of IPO listing took place during 1996-1997 and again during 2004-2007. This explains during boom listing of IPOs was high and after burst it decreased drastically.

Graph 01: Level of underpricing yearly



4.3 Result of Cross Sectional Regression Analysis:

Ordinary least square (OLS) regression is used to explain the cross-sectional variation in the abnormal returns. Table 04 provides the results of regression model. The results obtained by running regression analysis on STATA.

Source	SS	df	MS	Number of obs =	260
				F(4, 255) =	38.75
Model	556.645903	4	139.161476	Prob > F =	0.0000
Residual	915.756932	255	3.59120366	R-squared =	0.3781
				Adj R-squared =	0.3683
Total	1472.40284	259	5.68495303	Root MSE =	1.895

lnDUP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
OFSIZ	-.3327802	.0974654	-3.41	0.001	-.5247199	-.1408405
OFP	-.0847104	.0379619	-2.23	0.027	-.1594691	-.0099517
OFT	.0026569	.0017731	1.50	0.135	-.000835	.0061487
Float	.1028901	.0348338	2.95	0.003	.0342915	.1714888
_cons	4.464338	1.438821	3.10	0.002	1.630852	7.297823

The regression models' result suggest the following:

OFSIZ: From the results beta value of offer size is -0.3327802 which means that variation in the degree of underpricing has negative relation with offer size. Here p-value is 0.001 suggesting highly significant relationship at 1% level of significance in Canadian

energy sector.The relationship is consistent with the findings of Beatty and Ritter (1986), Chalk and Peavy (1990), Clarkson and Merkley (1994), Ibbostson (1984), kaneko and pettway(2003), Islam, Ali & Ahmad (2010). Hence null hyothesis can be rejected.

OFT: Regression model results suggest that beta value of Offer timing is 0.0026569. There is a positive relation between degree of under pricing and offer timing. Here p-value is 0.135suggesting that offer timimg has no significant effect on level of under pricing in Canadian energy sector. Therefore hypothesis 3 is not sustained. (Refer Chapter 3).

Float: Beta value of free float variable from the regression model result is 0.1028901. This shows positive relationship between degree of underpricing and free float in Canadian energy sector. The p-value is 0.003 which is highly significant at 1% level of significance. Though there is highly statisticaly significant effect on level of under pricing but the result is controrary to expected.

OFP: from the table 04, the result of variable offer price shows that there is negative and significant, at 5% level of significance, relationship between level of under pricing and offer price. Therefore null hypothesis is rejected.

The adjusted R-square is 36.83%. This means that offer price, size of the firm; offer timing, free float can explain 36.83% of variation of degree of underpricing in Canadian energy sector. This indicates that there are factors that may explain 63.17% of degree of underpricing in Canadian energy sector.

4.4 Adequacy of the Model:

4.4.1 Auto-Correlation effect:

Table 05 gives Dickey-Fuller test results. According to Dickey-fuller test there is no serious auto-correlation problem in the sample data set. The p-value is 0; suggest the

absence of serious auto-correlation effect. The Durbin-Watson falls within the range of acceptability (1.83). Therefore there is no serial correlation problem in the data.

Table 05: Dickey-Fuller Test Result

Dickey-Fuller test for unit root — Number of obs = 214

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Interpolated Dickey-Fuller		
Z(t)	-12.858	-3.472	-2.882	-2.572

MacKinnon approximate p-value for Z(t) = 0.0000

4.4.2 Multicollinearity Effect:

The results of Variance Inflator Factor (VIF) test are shown in Table 06. The VIF (1-10), tolerance (0.1-1) falls into the range of acceptability. Therefore according to the results there is no serious Multicollinearity problem in the regression model.

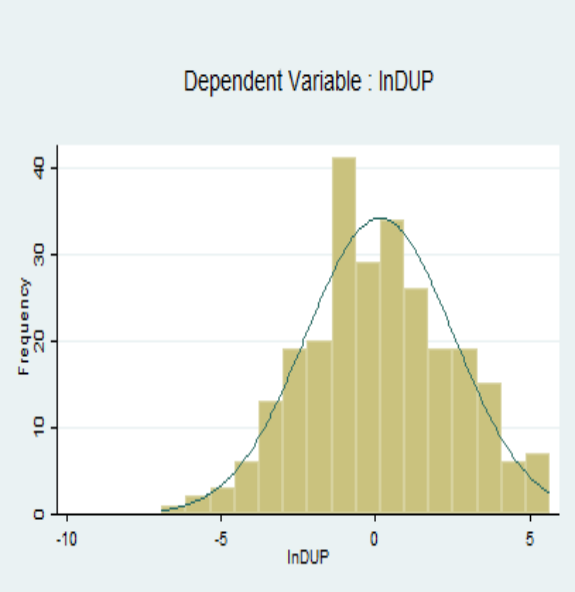
Table 06: Variance Inflation Factor.

Variable	VIF	1/VIF
OFSIZ	3.49	0.286919
OfferPrice	2.46	0.406396
Float	1.77	0.564156
OFT	1.02	0.977245
Mean VIF	2.19	

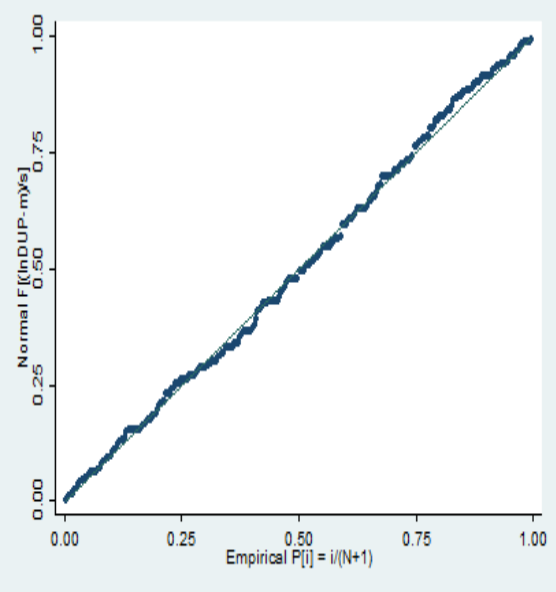
4.4.3 Normality & Linearity of Data:

Below graph shows the histogram of the data. Histogram suggest the normality of the data. Graph 03, P-P Plot and shows that data is linear.

Graph 02: Histogram of data



Graph 03: P-P plot of Linearity



4.4.4 Heteroskedasticity Effect:

Breusch-Pagan/Cook- Weisberg test for Heteroskedasticity, which tells whether the variance from distribution term for each explanatory variable is statistically same (homo) or not (hetero) is conducted. According to test results, shown in Table 07, Chi square value of 0.32 suggests null hypothesis of constant variance that cannot be rejected because p>chi at 57.39% . F-value of regression model result is high of 38.75% and is significant at 1% significance level.

Table 07: Heteroskedasticity Test

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of lnDUP

         chi2(1)      =     0.32
         Prob > chi2  =   0.5739
```

All the above test results identify the robustness of the model and therefore the model is adequate.

Chapter 5

Conclusion & Recommendation

This paper attempts to design for and test empirical models which integrate company specific and issue specific factors to explain IPO underpricing in Canadian energy sector from 1990-2014. This paper identifies level of underpricing or overpricing, level of underpricing on yearly basis. Multiple linear regressions are used to distinguish the relationship between various independent variables with the dependent variable. The independent variable are offer price, offer size, offer timing and free float to explain dependent variable – level of underpricing.

Out of 323 sample data set of Canadian energy sector IPO firms from 1990-2014, 260 (80.99%) are underpriced and 54 (16.824%) are overpriced and 7(2.18%) are similar priced. The overall level of over pricing is -0.2356909% with standard deviation of 0.2852138. The IPOs in Canadian energy sector are under priced at 12.49% with standard deviation of 36.9173. This result is almost consistent with earlier findings by Ritter and equityclock.com survey results.

Using a regression approach, degree of underpricing is explained by size based theory suggested by Ritter (1987), Chalk and Peavy (1990), Jog and Riding (1987), Suret, Cormier and Lemay (1990) and Clarkson and Merkley (1994) and behavioural theories of IPO pricing. It is found that other than offer timing all other variables considered in regression function have significant effect on IPO underpricing. In particular offer size and offer price has negative and significant effect on IPO underpricing in Canadian energy sector. These results explain empirical existence of the winners curse hypothesis model (Rock 1986, Beatty and Ritter1986). The general demand and supply theory is

found irrelevant in initial issue market of Canadian energy sector since free float has positive impact on IPO underpricing.

This is only short run IPO performance analysis and it estimates the effect of most common variables. Nonetheless, the limitations of this study can open an opportunity for further research work in this field. Overall result can be improved by adding more factors and observations into the study, but the only concern is lack of available research on the topic.

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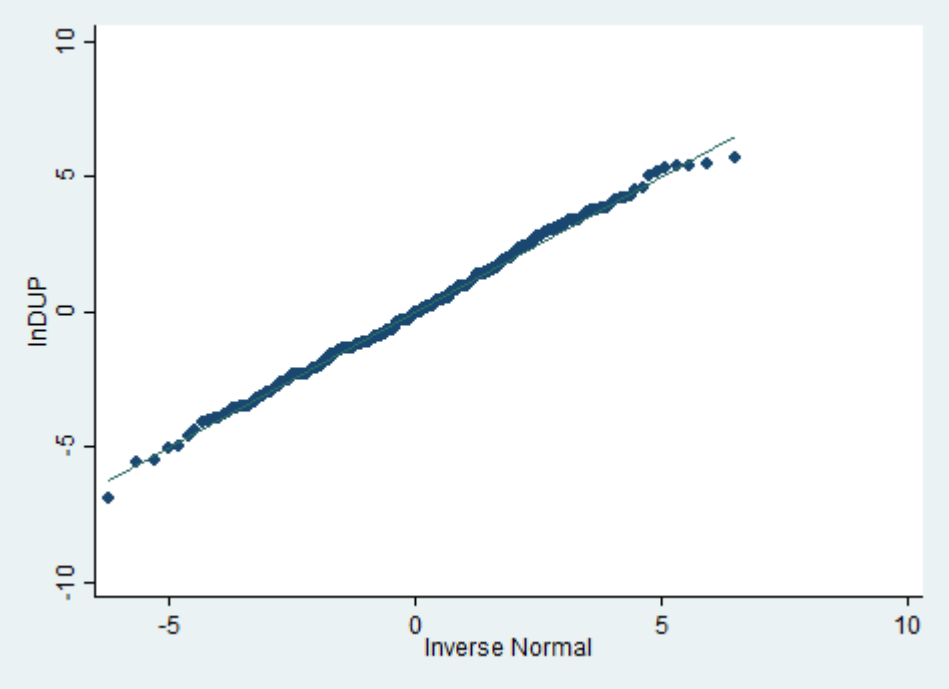
APPENDIX A

Q-Q plot of linearity



APPENDIX B

Data extracted from Bloomberg

Announced Date	Issuer Name	Offer Size (M)	Offer Price	Effective Date	Industry Sector	Initial Pub Offer (Shares Offered)	1st day close price
11/18/2013	Cardinal Energy Ltd	247.501	10.5	12/17/2013	Energy	21428600	11.53
08/17/2007	Cirrus Energy Corp	35.1325	2.35	08/24/2007	Energy	13000000	2.38
06/18/	Canadian	0.225	0.1	06/18/1	Energy	2250000	3

1997	Energy Exploration In			997			
10/17/1995	Ionic Energy Inc	0.175	0.35	10/17/1995	Energy	500000	0.5
11/19/2009	Emerge Oil & Gas Inc	65.55	2	11/19/2009	Energy	32775000	3
07/21/2006	North American Energy Partners	252.703	16	11/21/2006	Energy	12500000	16.1
04/27/2011	Gibson Energy Inc	568	16	06/08/2011	Energy	31250000	16.06
06/14/2010	MEG Energy Corp	700	35	07/29/2010	Energy	20000000	35.69
07/06/2011	First Mountain Exploration Ltd	0.28	0.2	09/27/2011	Energy	1400000	0.35
05/13/2011	Artisan Energy Corp	0.35	0.1	08/12/2011	Energy	3500000	0.3
06/28/2006	Calmena Energy Services Inc	72.6	10	08/11/2006	Energy	6600000	10.2869
04/07/2011	Abby Inc	0.359662	0	07/11/2012	Energy	12500000	0.03
11/01/2013	Rockefeller Hughes Corp	2.3287	0.18	03/20/2014	Energy	12937000	0.36
03/14/2013	Oryx Petroleum Corp Ltd	250.5	15	05/09/2013	Energy	16700000	14.66
07/19/2011	New Zealand Energy Corp	21.9105	1	08/04/2011	Energy	20000000	0.99
02/24/2011	CEU CN	87.6245	1.4	04/12/2011	Energy	57142900	1.55
11/15/2010	Skope Energy Inc	1.5	10	12/21/2010	Energy	150000	10.1
10/27/2010	Strad Energy	45	4	11/23/2010	Energy	10000000	3.74

	Services Ltd						
09/22/2010	Canada Coal Inc	0.31996	0.2	01/31/2011	Energy	1599800	0.27
06/07/2010	Innovente Inc	4.34773	0.85	12/02/2010	Energy	5114970	1
05/25/2010	Powder Mountain Energy Ltd	0.22	0.1	07/27/2010	Energy	2200000	2.0833
04/12/2010	Rodinia Oil Corp	57.2	1	05/28/2010	Energy	52500000	0.78
03/12/2010	Invicta Energy Corp	1	0.2	04/23/2010	Energy	5000000	0.35
02/17/2010	Petrofrontier Corp	0.3	0.1	07/14/2010	Energy	3000000	1.2
02/10/2010	Secure Energy Services Inc	66.125	3	03/30/2010	Energy	19166700	3.1
12/24/2009	Avatar Energy Ltd	0.3	0.2	03/12/2010	Energy	1500000	0.6
10/22/2009	Colonial Coal International Co	0.24	0.2	02/05/2010	Energy	1200000	0.8
09/28/2009	Manitok Energy Inc	0.25	0.2	11/05/2009	Energy	1250000	3.8672
08/28/2009	MATRRIX Energy Technologies In	0.2	0.2	10/16/2009	Energy	1000000	1.01
08/27/2009	Iona Energy Inc	0.6	0.2	10/22/2009	Energy	3000000	0.129
02/05/2009	Blackbird Energy Inc	1.5	0.1	07/14/2009	Energy	15000000	0.35
12/19/2008	Golden Coast Energy Corp	0.2	0.1	04/21/2009	Energy	2000000	1.35
11/27/2008	Lonestar West Inc	1.2155	0.5	01/09/2009	Energy	2431000	0.65
10/01/2008	Brandenburg Energy	0.2	0.1	02/10/2009	Energy	2000000	0.6

	Corp						
08/19/2008	CanElson Drilling Inc	0.2	0.2	09/25/2008	Energy	1000000	2.33
07/25/2008	CUB Energy Inc	0.25	0.1	09/08/2008	Energy	2500000	0.21
07/07/2008	Alaska Hydro Corp	0.2	0.1	09/05/2008	Energy	2000000	0.12
05/30/2008	United Hunter Oil & Gas Corp	0.4	0.2	07/25/2008	Energy	2000000	2
05/07/2008	Sea Dragon Energy Inc	15	0.25	07/15/2008	Energy	60000000	0.49
03/14/2008	EastSiberian Plc	0.4	0.1	05/15/2008	Energy	4000000	21
02/19/2008	DeeThree Exploration Ltd	0.8	0.2	06/17/2008	Energy	4000000	2.4
02/12/2008	Birch Lake Energy Inc	0.66	0.2	04/25/2008	Energy	3300000	0.3
02/04/2008	Canoel International Energy Lt	0.7	0.2	03/31/2008	Energy	3500000	3.5
01/25/2008	Gasfrac Energy Services Inc	0.25	0.1	04/03/2008	Energy	2500000	4.8
01/22/2008	Corsa Coal Corp	1.225	0.35	04/17/2008	Energy	3500000	0.5
01/21/2008	Royal Coal Corp	0.9	0.1	05/06/2008	Energy	9000000	0.38
01/11/2008	Orion Oil & Gas Corp	0.3	0.25	05/30/2008	Energy	1200000	1.1
12/05/2007	Wind River Energy Corp	0.2	0.1	01/28/2008	Energy	2000000	0.125
11/27/2007	Morumbi Resources Inc	0.2	0.1	03/31/2008	Energy	2000000	0.3

10/19/2007	Acadian Energy Inc	0.2	0.2	02/04/2008	Energy	1000000	1.2
11/22/2007	Biox Corp	0.24	0.1	02/12/2008	Energy	2400000	7.2
07/27/2001	Defiant Energy Corp	1.5	1.5	12/28/2001	Energy	1000000	1.4
08/27/2007	Lands End Resources Ltd	0.5	0.2	11/05/2007	Energy	2500000	0.225
07/17/2007	Cobalt Coal Ltd	0.5	0.1	08/07/2007	Energy	5000000	3.2
07/13/2007	Petro Uno Resources Ltd	0.6	0.2	09/24/2007	Energy	3000000	0.38
04/03/2007	Petro Andina Resources Inc	60.3	9	05/23/2007	Energy	6700000	10.54
04/27/2007	Terrace Energy Corp	0.4	0.1	07/16/2007	Energy	4000000	0.6142
03/07/2007	Americas Petrogas Inc	0.2	0.1	04/19/2007	Energy	2000000	0.45
02/26/2007	Alter Nrg Corp	40.2499	2.25	04/17/2007	Energy	15555600	9.28
02/05/2007	Compass Petroleum Ltd	0.4	0.15	04/12/2007	Energy	2666670	0.25
12/20/2006	China Coal Corp	0.3	0.1	02/06/2007	Energy	3000000	0.12
01/26/2007	Buffalo Coal Corp	1.15	0.2	02/28/2007	Energy	5750000	13.93
01/16/2007	Sonnenenergy Corp	0.3	0.2	03/28/2007	Energy	1500000	0.4
01/12/2007	PetroMaroc Corp PLC	0.3	0.3	05/09/2007	Energy	1000000	2.5
01/04/2007	Blacksteel Energy Inc	0.2	0.2	03/15/2007	Energy	1000000	2.5
12/22/2006	Homeland Energy Group Ltd	0.85	0.2	02/15/2007	Energy	4250000	0.7135
12/19/2006	Petro Vista	0.25	0.1	04/23/2007	Energy	2500000	3

	Energy Corp						
12/13/2006	Swift Power Corp	0.2	0.1	05/04/2007	Energy	2000000	0.5
11/03/2006	CBM Asia Development Corp	0.65	0.15	02/23/2007	Energy	4333330	0.41
10/20/2006	Marquee Petroleum Ltd	0.25	0.2	12/21/2006	Energy	1250000	1.05
10/17/2006	Canada Energy Partners Inc	3.12	1	11/22/2006	Energy	1800000	1.1
10/13/2006	SunOil Ltd	0.506	0.23	10/30/2007	Energy	2200000	1.7
10/13/2006	Ceno Energy Ltd	0.9	0.1	02/08/2007	Energy	9000000	21.25
10/05/2006	Ammonite Energy Ltd	0.8	0.2	02/12/2007	Energy	4000000	1.6
09/12/2006	Pinecrest Energy Inc	0.75	0.2	10/30/2006	Energy	3750000	0.625
08/29/2006	Reliable Energy Ltd	1.35	0.2	11/27/2006	Energy	6750000	0.375
05/30/2006	Petrolympic Ltd	0.58245	0.15	09/12/2006	Energy	3883000	0.15
08/04/2006	Solarvest BioEnergy Inc	0.3	0.2	08/04/2006	Energy	1500000	0.35
07/14/2006	Forent Energy Ltd	0.8	0.2	12/27/2006	Energy	4000000	0.54
06/29/2005	Primera Energy Resources Ltd	0.3	0.2	07/10/2006	Energy	1500000	0.22
04/27/2006	Ithaca Energy Inc	62.23	2.1	06/05/2006	Energy	28333300	2.05
05/10/2006	Waratah Coal Pty Ltd	0.3	0.1	05/29/2006	Energy	3000000	0.2
02/17/	Schneider	0.5	0.2	05/03/2	Energy	2500000	0.7

2006	Power Inc			006			
03/30/2006	Tallgrass Energy Corp	1.5	0.3	07/27/2006	Energy	5000000	5.071
01/30/2006	Petrodorado Energy Ltd	0.2	0.1	03/28/2006	Energy	2000000	0.22
10/27/2005	Xtreme Drilling and Coil Servi	1.5	0.15	03/23/2006	Energy	10000000	4.5
03/09/2006	Finavera Wind Energy Inc	0.21	0.15	05/23/2006	Energy	1400000	2
02/06/2006	Hanwei Energy Services Corp	0.2	0.1	03/27/2006	Energy	2000000	0.21
01/13/2006	Ecosse Energy Corp	0.20575	0.2	08/18/2006	Energy	1028750	0.31
09/28/2005	Fair Sky Resources Inc	0.75	0.25	01/16/2006	Energy	3000000	2.4
03/17/2006	Enquest Energy Services Corp	0.5	0.2	07/20/2006	Energy	2500000	6
09/27/2005	Arcan Resources Ltd	0.25	0.2	11/11/2005	Energy	1250000	4.692
10/27/2005	Bronco Energy Ltd	3.4743	0.75	11/11/2005	Energy	4028200	0.95
09/27/2005	Oando Energy Resources Inc	2	0.2	11/07/2005	Energy	10000000	7.6516
10/31/2005	Turnkey E&P Inc	115	5	12/13/2005	Energy	20000000	5.15
07/18/2005	Shear Wind Inc	0.45	0.15	10/25/2005	Energy	3000000	0.35
09/27/2005	First Sahara Energy Inc	3.02015	1.5	10/18/2005	Energy	2013430	0.81
06/27/	Magnum	1.5	0.75	09/28/2	Energy	2000000	0.7

2005	Energy Inc/Canada			005			
09/07/2005	Petrolifera Petroleum Ltd	21.3393	1.75	11/08/2005	Energy	12193900	1.62
08/17/2005	Bonnett's Energy Corp	45	10	09/21/2005	Energy	4500000	14
05/06/2005	Richards Oil & Gas Ltd	3.30515	0.5	06/29/2005	Energy	6610300	0.55
05/26/2005	Western Plains Petroleum Ltd	1	0.2	06/29/2005	Energy	5000000	0.25
06/10/2005	High Arctic Energy Services In	84	10	07/21/2005	Energy	8000000	57.55
05/20/2005	Xinergy Ltd	0.3	0.1	05/24/2005	Energy	3000000	4.7808
04/25/2005	Santa Maria Petroleum Inc	1.2	0.15	05/19/2005	Energy	8000000	8
03/28/2005	Sahara Energy Ltd	0.5	0.25	05/18/2005	Energy	2000000	1.8
01/28/2005	Prairie Schooner Petroleum Ltd	25.012	13	03/16/2005	Energy	1924000	16.1
03/15/2005	Jadela Oil Corp	0.5	0.1	03/24/2005	Energy	5000000	6.7428
01/25/2005	Canrock Energy Corp	1	0.1	03/11/2005	Energy	10000000	2
01/13/2005	Builders Energy Services Trust	51	10	01/25/2005	Energy	4600000	13.7
11/23/2004	Canadian Overseas Petroleum	1.5	0.25	12/14/2004	Energy	6000000	1.44

	Lt						
08/17/2004	Reece Energy Exploration Corp	0.4	0.2	11/24/2004	Energy	2000000	1.68
08/09/2004	Relentless Resources Ltd	0.4	0.1	10/14/2004	Energy	4000000	0.32
06/25/2004	Enterprise Group Inc	1.5	0.25	08/27/2004	Energy	6000000	0.3
06/25/2004	Penn West Santiago Ltd	1.5	0.3	07/29/2004	Energy	5000000	3.8226
04/19/2004	Kootenay Energy Inc	0.2	0.1	06/18/2004	Energy	2000000	0.35
04/06/2004	Maskal Energy Ltd	0.52345	0.2	06/08/2004	Energy	2617250	1
05/14/2004	Strike Petroleum Ltd	1.775	0.3	06/03/2004	Energy	5916670	0.4
04/29/2004	Grande Cache Coal Corp	57.2	2.6	05/12/2004	Energy	22000000	2.71
04/19/2004	Titan Exploration Ltd	1.125	0.25	05/06/2004	Energy	4500000	4.5
04/19/2004	Titan Exploration Ltd	10.125	10	05/06/2004	Energy	1012500	2.45
02/09/2004	Saturn Minerals Inc	1.15	0.2	05/03/2004	Energy	5750000	0.19
04/02/2004	Twoco Petroleums Ltd	6.001	1.7	04/28/2004	Energy	3530000	1.8
03/04/2004	Altima Resources Ltd	0.35	0.1	04/13/2004	Energy	3500000	0.13
03/19/2004	Alberta Oilsands Inc	1.5	0.3	04/08/2004	Energy	5000000	0.38
01/15/2004	Keeper Resources Inc	0.24	0.1	02/03/2004	Energy	2400000	0.32
05/06/	North	0.03	0.02	07/14/2	Energy	1500000	2

2003	Peace Energy Corp			003			
05/13/2014	Journey Energy Inc	198	12	06/19/2014	Energy	16500000	12.2
05/14/2010	C&C Energia Ltd	114.99	8.5	05/25/2010	Energy	11763500	7.33
10/21/2005	AltaGas Utility Group Inc	15.795	7.5	11/17/2005	Energy	2106000	7.5
04/14/2014	PrairieSky Royalty Ltd	1674.4	28	05/29/2014	Energy	52000000	36.25
03/13/2006	Canyon Services Group Inc	60.5	11	05/01/2006	Energy	5000000	13.6
06/26/2013	TransAlta Renewables Inc	221	10	08/09/2013	Energy	20000000	9.98
12/21/2012	Strata-X Energy Ltd	13.1301	0.3	03/12/2013	Energy	33333000	0.38
05/11/2012	Argent Energy Trust	244.145	10	08/10/2012	Energy	21230000	10.07
02/02/2012	Sunshine Oilsands Ltd	592.825	4.86	03/01/2012	Energy	923299000	4.7
03/11/2011	Parallel Energy Trust	393.3	10	04/21/2011	Energy	34200000	10.28
12/13/2010	Lone Pine Resources Inc	196.267	13	05/26/2011	Energy	15000000	12.54
10/14/2010	Tourmaline Oil Corp	241.5	21	11/23/2010	Energy	10000000	20.65
10/13/2010	Eagle Energy Trust	169.5	10	11/24/2010	Energy	15000000	10.01
04/29/2010	Serinus Energy Inc	123.164	1.89	05/25/2010	Energy	191394000	18.3
02/26/2010	Athabasca Oil Corp	1350	18	04/08/2010	Energy	75000000	15.7
06/01/2009	Alterra Power	110.4	1.5	07/07/2009	Energy	66667000	1.48

	Corp						
05/30/2008	Angle Energy Inc	31	8	06/30/2008	Energy	3875000	8.52
11/06/2007	EarthFirst Canada Inc	27.0436	2.6	12/11/2007	Energy	10401400	1.7
10/26/2007	Innergex Renewable Energy Inc	120.181	11	12/06/2007	Energy	10455000	10.92
09/06/2007	Epsilon Energy Ltd/Canada	72	4	10/24/2007	Energy	18000000	4.14
07/20/2006	Palko Environmental Ltd	40	10	08/24/2006	Energy	4000000	10.7116
07/06/2006	Petrowest Corp	140	10	09/07/2006	Energy	14000000	8.5581
06/02/2006	Royal Utilities Income Fund	172.5	10	06/27/2006	Energy	15000000	10.3
05/17/2006	Profound Energy Inc	35	4	06/28/2006	Energy	8750000	15.24
04/28/2006	Impax Energy Services Income T	68.4176	10	06/14/2006	Energy	6841760	9.4
02/09/2006	Pantera Drilling Income Trust	25	10	02/22/2006	Energy	2500000	11.25
01/19/2006	Canadian Energy Services & Tec	58.9387	10	03/02/2006	Energy	5893870	1.1167
12/16/2005	FMC Technologies Canada Ltd	50	16	02/06/2006	Energy	3125000	23.5
07/27/2005	Creststreet Power & Income Fun	57.4309	8.75	08/03/2005	Energy	6563530	8.95
04/19/	Capstone	211.69	10	04/30/2	Energy	21169000	9.52

2004	Infrastructure Corp			004			
12/22/2003	Jed Oil Inc	13.9079	5.5	04/05/2004	Energy	1675000	7.4667
09/27/2000	Stuart Energy Systems Corp	150.02	26	10/05/2000	Energy	5770000	26.45
10/24/1997	Pembina Pipeline Corp	624.25	10	10/24/1997	Energy	62425000	6
10/01/1997	Manalta Coal Income Trust Unit	870	10	10/01/1997	Energy	87000000	6.05
06/10/1997	KMS Power Income Fund	68.215	10	06/10/1997	Energy	6821500	10.2
07/16/1998	Transcanada Gas Processing LP	82.5	25	07/16/1998	Energy	3300000	25.1
11/27/1997	Inter Pipeline Ltd	375	10	11/27/1997	Energy	37500000	5.85
11/27/1997	Arcis Corp	6	0.5	11/27/1997	Energy	12000000	1.76
06/01/1991	TransCanada Corp	267.099	15.05	06/01/1991	Energy	15500000	12.8783
04/06/1998	CYGAM Energy Inc	0.29	0.2	04/06/1998	Energy	1450000	0.42
02/05/1998	Northline Energy Services Inc	0.3	0.15	02/05/1998	Energy	2000000	0.6
09/17/1997	Bow Valley Energy Ltd	16.5	2.65	09/17/1997	Energy	6226000	2.95
06/24/1997	Crownjoule Exploration Ltd	10	1.85	06/24/1997	Energy	5405000	1.7
06/24/1997	Talon Petroleum	1.5	0.75	06/24/1997	Energy	2000000	0.72

	s Ltd						
06/03/1997	Tethys Energy Inc	4	1.25	06/03/1997	Energy	3200000	1.65
04/25/1997	Pyramid Energy Inc	0.3	0.2	04/25/1997	Energy	1500000	0.42
03/26/1997	Plains Energy Services Ltd	5	5	03/26/1997	Energy	1000000	6.05
04/04/1997	Logan International Inc	1.5	1.5	04/04/1997	Energy	1000000	38.6667
04/22/1997	TG World Energy Corp	0.3	0.2	04/22/1997	Energy	1500000	0.35
03/19/1997	Rapidfire Resources Ltd	3	0.4	03/19/1997	Energy	7500000	0.37
02/06/1997	Jumbo Petroleum Corp	0.3	0.1	02/06/1997	Energy	3000000	0.25
05/30/1997	AC Energy Inc/Canada	0.3	0.15	05/30/1997	Energy	2000000	0.39
04/24/1997	HTC Purenergy Inc	0.2	0.1	04/24/1997	Energy	2000000	0.2
11/13/1996	Renata Resources Inc	0.2	0.1	11/13/1996	Energy	2000000	0.85
03/13/1997	Blackdog Resources Ltd	0.3	0.2	03/13/1997	Energy	1500000	4.44
09/10/1997	Culane Energy Corp	0.2	0.1	09/10/1997	Energy	2000000	4.495
05/27/1997	Landis Energy Corp	0.3	0.15	05/27/1997	Energy	2000000	0.21
06/10/1997	International Hydrocarbons Cor	3.57	0.85	06/10/1997	Energy	4200000	0.8
04/16/1998	Emerald Bay	0.3	0.15	04/16/1998	Energy	2000000	0.485

	Energy Inc						
12/27/1996	Orion Resource Corp	0.3	0.2	12/27/1996	Energy	1500000	0.45
07/23/1997	Canex Energy Inc	0.3	0.15	07/23/1997	Energy	2000000	0.24
12/13/1996	Hyperion Exploration Corp	0.3	0.1	12/13/1996	Energy	3000000	9.0667
04/09/1997	Vaquero Energy Ltd	16.5	3	04/09/1997	Energy	5500000	5.2
10/21/1996	Precision Drilling Corp	63.9322	31.63	11/14/1996	Energy	1500000	5.3401
04/17/1997	Greyhawk Oil & Gas Inc	0.3	0.15	04/17/1997	Energy	2000000	0.33
10/31/1996	Cavell Energy Corp	19.95	2.85	10/31/1996	Energy	7000000	3.6
11/08/1996	Stetson Oil and Gas Ltd	0.2	0.1	11/08/1996	Energy	2000000	23.1
09/04/1996	Plexus Energy Ltd	1.2	0.4	09/04/1996	Energy	3000000	0.52
08/21/1996	RIO Nevada Energy Inc	0.3	0.1	08/21/1996	Energy	3000000	0.59
09/30/1996	MFC Energy Corp	10.2	0.6	09/30/1996	Energy	17000000	105.9826
12/13/1996	Expedition Energy Inc	0.2	0.1	12/13/1996	Energy	2000000	0.18
04/11/1997	Process Capital Corp	0.2	0.2	04/11/1997	Energy	1000000	0.54
10/09/1996	Vecta Energy Corp	0.3	0.2	10/09/1996	Energy	1500000	0.35
10/15/1996	Geosimm Integrated Technologie	0.75	0.25	10/15/1996	Energy	3000000	0.33
05/29/	Patria	0.25	0.1	05/29/1	Energy	2500000	0.35

1996	Resources Ltd			996			
09/26/1996	PHX Energy Services Corp	0.3	0.1	09/26/1996	Energy	3000000	4.4
10/07/1996	PrimeWest Energy Trust	249	10	10/07/1996	Energy	24900000	7.9
08/16/1996	Technicoil Corp	15.504	6	08/16/1996	Energy	3000000	0.64
05/08/1997	Chain Energy Corp	2.5	1.25	05/08/1997	Energy	2000000	1.4
07/02/1996	Trigas Exploration Inc	5	1	07/02/1996	Energy	5000000	1.4
07/30/1996	Doreal Energy Corp	2.25	0.5	07/30/1996	Energy	4500000	0.87
12/09/1996	Trican Well Service Ltd	13.88	2	12/09/1996	Energy	6940000	0.5333
02/28/1996	Airgen Corp	1.8	0.4	02/28/1996	Energy	4500000	0.4
04/17/1996	Cypress Energy Inc	6	1000	04/17/1996	Energy	6000	1.6
03/13/1996	Stampeder Exploration Ltd	50	5	03/13/1996	Energy	10000000	5.125
06/16/1994	Enertec Resource Services	8.55	4.75	06/16/1994	Energy	1800000	4.7
06/03/1994	HRC Development Corp	1.125	1.25	06/03/1994	Energy	900000	2.1
10/12/1994	Belfast Petroleum Inc	0.3	0.6	10/12/1994	Energy	500000	0.6
11/08/1994	Mobius Resources Inc	0.525	0.3	11/08/1994	Energy	1750000	67.5
08/22/1994	Fox Energy Corp	1.05	0.35	08/22/1994	Energy	3000000	0.52

11/02/1995	Traverse Energy Ltd	1.65	0.3	11/02/1995	Energy	5500000	0.28
10/24/1995	Roseland Resources Ltd	0.3	0.6	10/24/1995	Energy	500000	0.8
10/19/1995	Cequel Energy Inc	0.2	0.2	10/19/1995	Energy	1000000	0.22
09/27/1995	Petrohawk Energy Ltd	0.3	0.2	09/27/1995	Energy	1500000	0.25
09/20/1995	Venture Seismic Ltd	9.5179	5	11/07/1995	Energy	1400000	5.25
08/30/1995	Peregrine Oil & Gas Ltd	0.55	0.5	08/30/1995	Energy	1100000	0.7
09/07/1995	Alpetro Resources Ltd	0.3	0.1	09/07/1995	Energy	3000000	0.13
09/29/1995	ZCL Composites Inc	1.5	5	09/29/1995	Energy	300000	5.75
07/21/1994	Torrington Resources Ltd	8	2.5	07/21/1994	Energy	3200000	2.7
09/06/1995	Red Sea Oil Corp	15.75	1.05	09/06/1995	Energy	15000000	1.6
06/22/1995	Suprex Energy Corp	0.3	0.15	06/22/1995	Energy	2000000	0.3
06/20/1995	Cubacan Exploration Inc	0.4	0.2	06/20/1995	Energy	2000000	0.35
10/29/1996	Telford Services Group Inc	0.2	0.1	10/29/1996	Energy	2000000	0.23
05/31/1995	Rooster Energy Ltd	0.42	0.35	05/31/1995	Energy	1200000	100
03/13/1995	International Methane Co Ltd	0.42	0.6	03/13/1995	Energy	700000	0.75
10/31/1994	Torino Oil & Gas Ltd	0.551	0.2	10/31/1994	Energy	2753000	0.22

11/16/1994	Brooklyn Energy Corp	4	1	11/16/1994	Energy	4000000	5
04/08/1994	Sunfire Energy Corp	1.1615	1	04/08/1994	Energy	1161500	1.0499
09/16/1993	CE Franklin Ltd	5.2568	4	11/18/1993	Energy	1000000	4.875
04/22/1999	AAN Ventures Inc	0.2	0.1	04/23/1999	Energy	2000000	0.5
11/30/1998	Caravan Oil & Gas Ltd	1.00215	0.75	12/09/1998	Energy	1336200	0.85
11/25/1998	C-Tech Energy Services Inc	0.2	0.1	11/27/1998	Energy	2000000	0.27
11/04/1998	Powermax Energy Inc	0.2	0.5	11/05/1998	Energy	1000000	0.25
10/09/1998	Raven Energy Ltd	0.2	0.1	10/13/1998	Energy	2000000	0.25
05/12/1998	Globex Resources Ltd	0.3	0.2	05/12/1998	Energy	1500000	0.45
05/05/1998	Hartland Pipeline Services Ltd	9	6	05/05/1998	Energy	1500000	8.6
04/07/2011	Longview Oil Corp	172.5	10	04/14/2011	Energy	15000000	10.45
11/03/2005	Spectra Energy Income Fund	154	10	12/20/2005	Energy	14000000	11.1
09/21/2005	Synenco Energy Inc	316.925	17.5	11/15/2005	Energy	15750000	16.7
07/14/2005	Primary Energy Recycling Corp	310	10	08/24/2005	Energy	28500000	18.3895
04/27/2005	ExAlta Energy Inc	30.03	3.85	05/10/2005	Energy	7000000	4.05
03/09/	Pine Cliff	5.46301	0.15	04/11/2	Energy	36420000	0.3783

2005	Energy Ltd			005			
03/24/2005	Highpine Oil & Gas Ltd	72	18	04/05/2005	Energy	4000000	19.5
06/11/2004	Deer Creek Energy Ltd	160.55	9.5	07/29/2004	Energy	16900000	9.3
05/18/2004	Blizzard Energy Inc	28.75	1.25	05/26/2004	Energy	20000000	1.35
04/06/2004	CNOOC Canada Inc	301.4	22	04/15/2004	Energy	13700000	11.475
11/19/2003	RMS Systems Inc	1.5	0.15	03/05/2004	Energy	10000000	0.26
06/23/2003	Wild Stream Exploration Inc	0.45	0.3	01/28/2004	Energy	1500000	6.2647
01/23/2004	Duvernay Oil Corp	52.5	10.5	02/03/2004	Energy	5000000	12.26
11/28/2003	SouthGobi Resources Ltd	15	3	12/15/2003	Energy	5000000	3.3
09/25/2003	Pilot Energy Ltd	0.3	0.3	12/01/2003	Energy	1000000	0.72
11/12/2003	Leader Energy Services Ltd	2.31	0.3	11/28/2003	Energy	7700000	4.32
10/17/2003	Caribou Resources Corp	1.75	0.3	11/12/2003	Energy	5833330	2.3083
10/03/2003	Calpine Natural Gas Trust	202.996	10	10/15/2003	Energy	18454200	10.75
03/27/2003	ShaMaran Petroleum Corp	0.75	0.15	07/24/2003	Energy	5000000	0.17
12/19/2002	Yangarra Resources Ltd	4.00392	0.45	12/19/2002	Energy	8307610	4.95
11/27/	Harvest	30	8	12/05/2	Energy	3750000	8.5066

2002	Energy Trust			002			
06/18/2002	Cheyenne Energy Inc	1	0.25	12/03/2002	Energy	4000000	0.35
07/08/2002	Crossfire Energy Services Inc	0.54108	0.15	10/10/2002	Energy	3607200	4
06/14/2002	Celtic Exploration Ltd	0.25	0.25	07/08/2002	Energy	1000000	0.65
07/02/2002	First Calgary Petroleums Ltd	40	1.25	07/30/2002	Energy	32000000	1.3
03/15/2002	Tamarack Valley Energy Ltd	0.3	0.2	06/13/2002	Energy	1500000	4.8
03/07/2002	HRT Canada Inc	0.555	0	03/08/2002	Energy	2000000	0.1167
09/05/2001	Javelin Energy Inc	0.3	0.15	11/30/2001	Energy	2000000	0.8
11/16/2001	Kallisto Energy Corp	0.3	0.15	06/13/2002	Energy	2000000	6.08
11/09/2001	Landmark Oil & Gas Corp	0.5	0.2	03/12/2002	Energy	2500000	0.3
11/08/2001	Arbour Energy Inc	0.5	0.3	02/28/2002	Energy	1666670	0.37
12/04/2001	Whitecap Resources Inc	0.2	0.2	01/15/2002	Energy	1000000	6
08/20/2001	Lexoil Inc	0.3	0.2	10/26/2001	Energy	1500000	0.25
08/17/2001	Val Vista Energy Ltd	0.5	0.2	10/05/2001	Energy	2500000	1.26
07/09/2001	Vinvergy Resources Ltd	0.5	0.2	02/14/2002	Energy	2500000	0.19
08/08/2000	Rival Energy Ltd	0.3	0.3	06/01/2001	Energy	1000000	2.28

11/15/2000	Anterra Corp	0.499	0.15	03/06/2001	Energy	3333330	0.2
12/29/2000	Esrey Energy Ltd	0.25	0.2	03/06/2001	Energy	1250000	12.4
02/22/2001	Birchcliff Energy Ltd	1.3047	0.6	02/22/2001	Energy	2174500	0.5
02/13/2001	Real Time Measurements Inc	0.75	0.25	02/13/2001	Energy	3000000	0.29
01/26/2001	Sentra Resources Corp	0.5	0.3	07/09/2001	Energy	1666670	1.6
01/31/2001	Donnybrook Energy Inc	0.45	0.15	06/15/2001	Energy	3000000	0.0442
01/24/2001	Wrangler West Energy Corp	0.5	0.3	05/10/2001	Energy	1666670	6.3
12/21/2000	Predator Exploration Ltd	0.3	0.2	10/17/2001	Energy	1500000	0.48
12/20/2000	Diamond Tree Energy Ltd	0.5	0.2	12/04/2001	Energy	2500000	2.24
12/15/2000	Novus Energy Inc	0.3	0.15	12/15/2000	Energy	2000000	7.2
02/05/2001	Ripper Oil and Gas Inc	0.5	0.2	04/19/2001	Energy	2500000	3.2
09/20/2000	Goose River Resources Ltd	0.5	0.25	09/20/2000	Energy	2000000	0.55
06/14/2000	Collicutt Energy Services Ltd	23.1	7	06/28/2000	Energy	3300000	9
05/26/2000	Command Drilling Corp	27	2	06/05/2000	Energy	13500000	2.06
03/27/1998	Technicoil Corp	0.3	0.1	03/27/1998	Energy	3000000	0.49

01/19/1998	Delaney Energy Services Inc	0.3	0.1	01/19/1998	Energy	3000000	0.15
10/14/1997	Morrison Middlefield Resources	28	14	10/14/1997	Energy	2000000	13.75
04/22/1997	Saddle Resources Inc	0.3	0.3	04/22/1997	Energy	1000000	0.75
04/15/1997	Laniuk Industries Inc	1.05	0.35	04/15/1997	Energy	3000000	0.48
02/06/1997	Grace Resources Inc	0.2	0.1	02/06/1997	Energy	2000000	0.5
05/09/1997	Flowing Energy Corp	0.2	0.2	05/09/1997	Energy	1000000	0.4
03/10/1997	Total Energy Services Inc	0.26	0.1	03/10/1997	Energy	2600000	0.35
04/02/1997	Extreme Energy Corp	0.2	0.2	1997-02-04	Energy	1000000	0.3
03/13/1997	Gulf Shores Resources Ltd	0.45	0.6	03/13/1997	Energy	750000	27
02/11/1997	Triquest Energy Corp	0.2	0.2	02/11/1997	Energy	1000000	5
01/28/1997	Acclaim Energy Trust	200.031	10.1	01/28/1997	Energy	19805000	83.871
01/03/1997	APIC Petroleum Corp	1.3	0.4	01/03/1997	Energy	3250000	0.4
12/18/1996	Viking Energy Royalty Trust	143.22	10	12/18/1996	Energy	14322000	9.7
10/16/1996	Del Roca Energy Inc	0.2	0.1	10/16/1996	Energy	2000000	0.56

08/22/1996	Terraco Gold Corp	0.2	0.1	08/22/1996	Energy	2000000	0.25
07/31/1996	Taylor NGL LP	81.5048	10.4	07/31/1996	Energy	7837000	10.4
07/31/1996	Shiningbank Energy Income	52.89	10	07/31/1996	Energy	5289000	6.05
07/29/1996	Ultima Energy Trust	120.6	10.05	07/29/1996	Energy	12000000	10
07/11/1996	ARC Resources Ltd	180	10	07/11/1996	Energy	18000000	10
05/09/1996	NAL Energy Corp	138.375	10.25	05/09/1996	Energy	13500000	10.1
04/11/1996	Huntington Exploration Inc	1	0.5	04/11/1996	Energy	2000000	0.85
11/16/1994	Campion Resources Ltd	0.2	0.1	11/16/1994	Energy	2000000	0.11
10/04/1995	Gordon Creek Energy Inc	0.3564	0.81	10/04/1995	Energy	440000	121.5
06/22/1994	Ice Drilling Enterprises Inc	0.75	0.5	06/22/1994	Energy	1500000	0.57
11/30/1995	Canadian Oil Sands Ltd	270	10	11/30/1995	Energy	27000000	2.15
09/29/1999	Patriot Petroleum Corp	0.204	0.17	09/29/1999	Energy	1200000	0.56
10/12/1999	Tinhorn Resources Ltd	0.25	20	10/13/1999	Energy	1250000	0.43
10/06/1999	Western Wind Energy Corp	0.63	0.35	12/23/1999	Energy	1800000	0.46
10/01/1999	Result Energy Inc	0.4	0.2	10/15/1999	Energy	2000000	3.361